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## Coronation Weekend

ALL over the country this week familiar surroundings have been transformed by the decorations which testify to the spirit of rejoicing with which Great Britain and the Commonwealth await the Coronation of Queen Elizabeth II. While science will bring the scenes of the ancient ceremonial and its attendant pageantry into thousands of homes, it has in no way diminished the eagerness among all who can do so to be present on the Coronation route itself, however long the vigil. To meet the needs of these spectators, services on some British Railways local lines in the London area on June 2 will begin as early as 1 a.m. Cheap tickets from more distant stations will enable travellers to start their journeys to London at any time after 9 p.m. on June 1, and special long-distance trains will run overnight from such distant points as Aberdeen, Edinburgh, Glasgow, Newcastle, Manchester, Cardiff, and other cities to give early morning arrivals on June 2. London Transport rail services from 160 stations on June 2 will start as early as 3 a.m., giving a 15-min. service until 6 a.m., after which peak-hour services at 2 or 2½ min. intervals will continue all day. In addition to this movement into London, and the later return flow, British Railways will be providing

special services in all parts of the country for visitors to local celebrations, and provision has been made for heavy sightseeing traffic during the month to London and elsewhere for the decorations and illuminations. Forty-two special trains will be run on the Southern Region from Waterloo to Southampton on June 15 for the Coronation Naval Review. Decorated and renovated stations and floodlighting are immediately apparent signs of how British Railways and London Transport are participating in the expression of loyal greetings to the Queen on her Coronation, but all their members are contributing no less to the spirit of the time in the good humour and resourcefulness with which they are handling the extra traffic now reaching its climax, and which for some weeks will continue to be superimposed on the normal business and holiday movement of the summer months.

## Mr. P. Croom-Johnson

THE retirement of Mr. P. Croom-Johnson, C.B.E., M.Inst.C.E., Chief Engineer, London Transport Executive, recorded elsewhere in this issue, will close an outstanding engineering career of more than forty years. A pioneer of long-welded rails in this country, he gained particular distinction in the electrical engineering field. He was a member of the special committee appointed in 1948 by the Railway and London Transport Executives which investigated the methods of electric traction used on the railways and considered possible future electrification systems. Among the most important of his many services must be included the repair and restoration of London Transport rail and road properties during the recent war years. He was also responsible for many of the special measures taken to protect the railways from enemy action during the latter stages of the war. He directed the postwar programme of new railway works, the previous fulfilment of which had been delayed by hostilities, and also the rehabilitation and restoration of tunnels and railway depots which had been used for war purposes. Mr. Croom-Johnson was subsequently responsible for the Ruislip-Epping extension on the Central Line, which was completed over a period of two years.

## Standardisation and Inventiveness

CONCERN at the possible effect of standardisation on inventiveness if pushed to extremes, was expressed by Mr. K. W. C. Grand, Chief Regional Officer, Western Region, when speaking at a Mayoral luncheon in Swindon on May 19. Mr. Grand thought the principle had grown into a fetish on British Railways, until it was becoming difficult to recruit young designers because they knew that instead of producing creative work, all they would be called on to do to meet any requirements would be to take a blueprint out of a drawer. Continuing on this theme, Mr. Grand said competition would be welcomed because it would mean producing the best in locomotives and rolling stock instead of following a standardised practice that might be extended until no new blood was being brought into the railway industry. These misgivings are widely shared, and the reconciling of standardisation with inventiveness was mentioned specifically among the future problems for transport to study by Mr. Alan Lennox-Boyd, the Minister of Transport, when addressing the annual luncheon of the Institution of Locomotive Engineers last March. The danger is not in the principle of standardisation as such, which has already shown economies and improvements in efficiency, but in the tendency to carry it to excess and in the human weakness for avoiding exertion which may find in it an excuse to stagnate.

## The G.N.R. Bill

THE Great Northern Railway Bill has passed its report stage in the Northern Ireland House of Commons and the Dail. A Unionist member had intended moving its withdrawal, for one reason because the new joint board was to be given control of rail and road co-ordination in the North without, in his view, being amenable to the Ulster Parliament. He did not pursue his intention, how-

ever, believing that if the terms of the Bill—a big experiment in co-operation between two Governments—were carried out with goodwill on both sides it was possible that the arrangements would work out satisfactorily. Mr. W. V. McCleery, Northern Ireland Minister of Commerce, was able to satisfy another Unionist that no man in the Duncrue Street Works of the U.T.A. in Belfast would be affected by the taking over of the G.N.R. by the joint board. Of the special train being used for the forthcoming Royal visit to Northern Ireland, he said, the part which was coming from Dundalk Works was being supplied by the existing G.N.R.; Duncrue Street was providing the Northern Ireland part. The Minister thought that was proof of the goodwill and co-ordination which existed at present.

### Overseas Railway Traffics

**T**HERE was a small recovery in March in traffics of the Midland Railway of Western Australia, which showed an advance of £A1,705. Previous less favourable comparisons during the current year were referred to by the Chairman, Mr. Robert Adeane, at the company's recent annual meeting in London (see our May 8 issue), and the aggregate from July 1, 1952, still shows a decrease of £A36,110 at £A492,823. Paraguay Central results have continued their increases, the gains in the weeks ended May 8 and May 15 being G375,336 and G301,097 respectively. The company's aggregate result is now G13,965,567 up on the previous year. A one-day holiday this year on the Antofagasta (Chili) & Bolivia Railway in the week ended May 15 brought a setback of £9,528, the first decrease since the week ended April 10, so that the decrease on the aggregate from January 1 is now £23,722. Dorada results for the month of April improved by £4,832 and brought the aggregate from January 1 up to £150,501, an increase of £16,354. On the South African Railways there were decreases in all classes of traffic except livestock during April, the month's total being down by £37,121 and the aggregate from April 1 by £299,388.

### Expanding Transport Demand in Canada

**I**N his review of the Canadian transport situation to shareholders of the Canadian Pacific Railway Company at the recent annual general meeting, the President, Mr. W. A. Mather, said the essential problem now was for the railways to keep pace with Canada. As a result of developments in various directions, railway capacity in Canada had in large measure been used up. Quoting from the experience of the Canadian Pacific he showed how a still growing volume of traffic was being handled with an increasing operating efficiency which had permitted decreases in the number of vehicles and locomotives required. Mr. Mather was in the fortunate position of being able to allude to a capital investment programme proportioned to the present need for transport facilities adequate to serve the country's growing productive capacity. Road competition would be serious as long as the railways were bound by a rating system devised when competition was relatively unimportant. He felt, however, that changes could be made without impairing prosperity in any part of Canada while he felt that the adjustment of the rates structure to present-day circumstances would react to the benefit of the country as a whole. In this connection Mr. Mather quoted the action of the British Government in showing its recognition of the changed conditions by granting greater freedom to the railways in the new Transport Act.

### Traffic Movement in Western Australia

**T**HE comparison in our August 15, 1952, issue between the performance of British and U.S.A. railways, measured in ton-miles, has led to the presentation of similar figures for the Western Australian Government Railways in the April issue of the administration's *Railway Institute Magazine*. Between 1938 and 1952 the figure of net ton-miles per mile of road per day is shown to have risen from 286 to 463, but it is pointed out that the latter is below

the level of about 685 ton-miles per mile of road per day which was put forward at the 1952 Stockholm meeting of the Permanent Commission of the International Railway Congress Association as the minimum below which a line should be closed. A further suggestion at this meeting, that lines where traffic density does not exceed 15 per cent of the average traffic of the system should be closed, is quoted in the article with the comment that on this basis no less than one-third of the W.A.G.R. system is at present being worked on an uneconomical basis. The conclusion is that a great increase in the hauling power of traction units is necessary if the system is to aspire to figures such as 8,270 net ton-miles per mile of road per day achieved by the U.S.A. railways in 1951.

### Railway Students' Association Brussels Convention

**B**RUSSELS, at the convergence of eight main lines and in the centre of the densest railway network of any country in the world, was the venue for this year's Railway Students' Association Convention, an account of which appears elsewhere in this issue. Not only do the railways of Belgium carry over half its inland goods traffic, but there is a large amount of transit traffic, both freight and passenger. The part played by the Belgian National Railways in international traffic was the subject of a paper read at the opening of the convention on May 18, when Mr. C. P. Hopkins, President of the Association, and Chief Regional Officer, Southern Region, British Railways, was in the chair. One of the visits included in the convention programme was to the Brussels Junction Railway, the major project linking the Nord and Midi Stations across the city by six tracks and with three intermediate stations. Although much construction has still to be completed, all the new stations, including Nord and Midi (on a higher level than hitherto), and two tracks are in operation.

### A New South African Workshops

**O**F the many large-scale projects on which the South African Railways are now engaged one of the most important and beneficial is the construction of fine new workshops being laid out at a cost of £10,000,000 on a new and spacious site at Koedoespoort, near Pretoria. The significant increase in traffic on the S.A.R. since the war and a corresponding increase in motive power and stock was severely taxing the capacity of existing shops which it was found impossible to enlarge sufficiently, hence the necessity to embark on a new and costly installation. The extent of the scheme and the progress which has so far been made will be seen from the description and illustrations appearing elsewhere in this issue. Koedoespoort will both build and repair coaches, and will also repair steam locomotives and turn out spare parts. In broad layout the works comprise a northern and a southern section separated by two groups of stores buildings and a crane track traversing the storage area. Standardisation and pre-fabrication figure largely in the construction of all the buildings.

### "London on Wheels" at Euston

**I**N opening the exhibition, "London on Wheels," in the Shareholders' Meeting Room at Euston, on May 20, Lord Hurcomb, Chairman of the British Transport Commission, expressed the hope that it was the first of a series which would encourage interest in the historical relics preserved by the B.T.C. The present exhibition traces the remarkable development of transport in London, by rail, road, and water, during the nineteenth century, and brings together a fascinating and varied collection of prints, photographs, maps, models, tickets, and equipment. The room in which the exhibition is being held is itself of outstanding interest. Built for the London & North Western Railway, and opened in 1849, it is claimed to be the only room provided specially for meetings of railway shareholders. It has been restored for the exhibition as nearly as possible in the decorations and finishings specified by the architect, Philip Charles Hardwick, son of the archi-

tect of the Doric Arch at Euston. This is the first occasion on which it has been thrown open to the public. The exhibition will remain open until August 29, on weekdays from 10 a.m. to 7 p.m., and on Sundays from 2 to 7 p.m.

### The New Zealand Railways Commission

THE machinery of the New Zealand Government Railways Amendment Act, 1952, which set up a management commission for the railways, has worked so well during the initial months of its operation that the changeover has been particularly smooth. One of the main reasons is that Mr. H. C. Lusty, General Manager of Railways, remains in office as chief executive officer of the Commission and is permanent head of the department. The Commission has entered on its duties unobtrusively, and although it is too early to point to results as only a few months have elapsed since the first meeting of the Commission on January 21 everything augurs well for the future of the railways under the new organisation.

The Amendment was based on one of the recommendations of the Royal Commission which inquired last year into the control and running of the railways. (Our July 11, 1952, issue contained a summary of evidence heard by the Royal Commission and in that of July 25 was discussed editorially the Commission's report to the Government.) The functions and duties of the new Railway Commission are clearly defined in the Amendment, and it is laid down that it shall do all things which, in its opinion, are necessary for the efficient management, operation and development of the railways and every service lawfully carried out by the Commission within the limits of the money appropriated by Parliament for expenditure out of the Working Railways Account. Three of the directors appointed were members of the Railways Department, including Mr. W. E. Hodges, Chairman, who was formerly Commercial Manager, and two came from outside the Government service.

Since it was formed the Commission has been concerned mainly with more urgent policy matters, and on-the-spot investigations. Fares and freight charges have also been under consideration. It is expected that it will act, whenever practicable, on the recommendations of the Royal Commission, but success will depend on the amount of freedom left to it in carrying out Government policy. There are, for example, important differences between the recommendation of the Royal Commission for the establishment of a corporation and the Commission as established under the Amendment to the Government Railways Act.

The Royal Commissioners stressed the need for continuity in railway policy. The division of management and responsibilities between the Minister of Railways and the General Manager led to delay in decision and meant that each had to devote much time to relatively unimportant matters. Because of the principle of retirement after 40 years there had been seven general managers of the New Zealand Railways in 24 years, and the unwisdom of such frequent changes was exemplified by the opposing views on main line electrification held by the present General Manager and his predecessor. It was in the best interests of the railway, considered the Royal Commissioners, that the Minister should not be concerned with day-to-day matters and that actual management should be vested in an executive of five. In its opinion boards or commissions set up to run the railways in the past had had only limited success, probably because they had lacked men with sufficient railway training. It concluded that the most effective method of control was by means of a corporation resembling the National Airways Corporation or the Bank of New Zealand.

Before 1925 the railways were organised on a departmental system under a general manager responsible to the Minister of Railways, but as a result of the recommendations of a Royal Commission headed by Sir Sam Fay and Sir Vincent Raven, which made its investigations at the end of 1924, a board of management consisting of a chairman and two other members, was set up instead. The principal

object was to protect the railways as much as possible from political interference. This form of organisation lasted until April, 1936, when it was abolished by a newly-elected Labour government in favour of a resumption of full government control of the railways, although at the time it was stated in many quarters that the working of the board had always been financially satisfactory at least.

When he introduced the second reading of the Bill Mr. W. S. Goosman, Minister of Works, Transport, Railways, & Marine, read a statement which made it clear that the Government intended to retain control of railway policy and delegate to the new Commission the responsibility for the management and administration of the railways hitherto exercised by the Minister of Railways and the General Manager.

It may be asked why, after transferring the railways to Commission control, the Government is still able to control railway affairs to this extent. This becomes clear, however, when it is understood that although the Government has delegated to the Railways Commission the responsibility for the management and administration of the railways, the Commission must give effect to the direction of the Government. On this point the Amendment provides that in the exercise of its functions and powers the Commission shall (a) have regard to any representations that may be made by the Minister in respect of any functions or powers of the Commission, and (b) give effect to any decision of the Government in relation thereto, conveyed to the Commission in writing by the Minister.

The obligation to make recommendations to the Government rather than guide the destiny of the railways in a more direct manner may at first sight be deemed to be a disadvantage. Criticism has already been made that too much political control is still left in the hands of the Minister, but this risk had to be taken. The Government, where there is a State railways system, must inevitably be the final authority, for it is accountable to the people for whatever is done, and the Minister of Railways himself must accept a large share of the responsibility for decisions. The important point is that in the interests of efficiency and effectiveness, political interference should be reduced to a minimum. Time—and it will have to be a fairly long time—will be needed to decide if the present system of Commission control has come up to all that is expected of it. In the meantime the Commission is grappling with some of the larger problems. Most of them will require careful investigation and study before decisions are made and it will certainly be some months before effective action can be taken on such matters as finance, the railway operation of certain ports, branch lines, and motive power, to mention only a few which were recommendations of the Royal Commission.

### E.R. Cambridge Line Summer Services

FROM time to time in the past railways in Great Britain have carried out complete reconstructions of their main-line timetables, coupled with the introduction of systematic departure times. The London & South Western Railway did so in July, 1921, though confining its regular-interval departures to down trains; the Great Western Railway followed suit in July, 1924, with systematic up departures from Bristol, Cardiff, and Birmingham to Paddington as well as from London. Since the late war there has been a certain amount of systematisation of down departures from Euston, London Midland Region, and Kings Cross, Eastern Region, as well as of the Central Division services of the L.M.R. between Liverpool, Manchester, Leeds, and Bradford, but it has been left to the Great Eastern Section of the Eastern Region to show what can be done by taking a timetable to pieces and making an entirely fresh start.

The summer of 1951 saw a completely reorganised service brought into operation over the Colchester main line, aided by the introduction of the "Britannia" class Pacifics and the considerably greater freedom in speed brought about by the electrification between Liverpool Street and



Shenfield. As a result, Norwich became linked with London by a regular-interval service timed at a higher average speed even than those between Euston and Birmingham or Paddington and Bristol, and far faster than ever in the past history of the G.E. Section. The new Pacifics were capable of making two double journeys daily between London and Norwich—a 460-mile round never attempted previously with any other type of locomotive on this route—and rolling stock equally was put to more intensive use than before.

With the drafting to the Great Eastern Section of further "Britannia" class engines, the turn of the Cambridge main line has now come, and with it a reorganisation almost as revolutionary as that on the Colchester line. The former has been carried out in much the more difficult conditions of the two. Quadruple passenger tracks are available no further out of Liverpool Street than Hackney Downs Junction, three miles away; an ordinary double track has then to be shared with the busy Chingford line traffic as far as Clapton Junction; and, as distinct from the very limited freight traffic over the Colchester line, from Coppermill Junction (five miles out) through-out to Ely the Cambridge line carries a heavy freight and mineral traffic passing between Whitmoor, Temple Mills, and the London Docks. While there are now numerous goods loops along this route, a further complication is provided by the considerable industrial developments in the Lea Valley, which have added greatly to the stopping passenger service between Tottenham and Broxbourne. There are also the handicaps of the long single platform for up and down trains at Cambridge, and the limited facilities for marshalling at Ely, together with a number of speed restrictions. It is not possible, therefore, to schedule such high speeds over the Cambridge as over the Colchester line.

As with the Colchester line service, train times of the new Cambridge line service are based on whether each train will normally be worked by a 4-6-2 or a 4-6-0 locomotive, and for loads of 300 or 400 tons (9 or 12 bogies respectively). Starting times from Liverpool Street are either at 24 or 54 min. past the hour, and from Cambridge, in the up direction, at 15 or 45 min. past the hour. The 8.20 a.m. down thus starts at 8.24 a.m., and with the same three stops as before is due at Cambridge at 9.45 a.m. (13 min. acceleration); certain stops are omitted beyond Thetford, and Norwich is reached at 11.43 a.m., in 3 hr. 19 min. (36 min. quicker). The 11.50 a.m. starts at 12.24 p.m., gains 10 min. to Cambridge (1.41 p.m.), and 27 min. to Norwich (3.38 p.m.).

Following are the 2.24 (late 2.25) p.m., 5.54 (late 5.51) p.m., and 7.24 (late 7.20) p.m., accelerated 8, 9, and 7 min. to Cambridge, and 17, 35, and 17 min. to Norwich respectively, their whole journeys being completed in 3 hr. 19 min., 3 hr. 27 min., and 3 hr. 13 min. All the foregoing five, with the 4.24 a.m. and 10.24 p.m. down (accelerated 27 and 18 min. respectively) are to be Pacific workings. Of other down trains, the summer 10.50 a.m. to Hunstanton (now 10.54), and the 4.30 p.m. "Fenman" to Hunstanton are both non-stop to Cambridge in 68 min. (10 and 12 min. acceleration), and the 2.20 p.m. Wisbech "relief" on Saturdays also is a 68 min. non-stop train. The 4.36 p.m. to Bury gets down to Cambridge in 78 instead of 91 min.

Accelerations in the up direction are on the same scale. The Pacific workings from Norwich are at 8 (late 8.32) a.m., reaching Liverpool Street 11.21 a.m. (41 min. acceleration); 10.3 (late 10.30) a.m. Liverpool Street 1.33 p.m. (33 min. acceleration); 1.32 (previously 2.5) p.m., Liverpool Street 5 p.m. (25 min. acceleration); 2.48 p.m. (late 3 p.m.), Liverpool Street 6.2 p.m. (31 min. acceleration); and 5.15 p.m. (late 4.50 p.m.), Liverpool Street 8.40 p.m. (27 min. acceleration). Average acceleration of the five principal day trains in each direction is thus 29 min. between London and Norwich, and they are spaced at better intervals than before. The 6.50 a.m. from Hunstanton (late 6.45) is 15 min. faster, and has a non-stop run from Cambridge (8.45 a.m.) in 68 min. The other Cambridge non-stop is the 7.4 p.m. from Hunstanton (last summer 7 p.m.), leaving at 8.45 p.m. and

reaching London at 9.54 p.m. (10 min. faster). Of other trains, the 7.45 a.m. from Cambridge (late 7.48) reaches Liverpool Street at 9.1 a.m., 23 min. earlier.

By far the fastest schedule ever tried between Norwich and London over the Cambridge route is that of the 6.25 p.m. from Norwich on Sundays, calling only at Ely (7.28/7.40 p.m.), and thence non-stop to Liverpool Street, arriving at 9.6 p.m.; this is 23 min. faster than previously. Also the fastest booking ever scheduled between Cambridge and Liverpool Street is the 64 min. non-stop of the 5.10 p.m. from Norwich on Sundays (7.15 p.m. from Cambridge); this train is booked to pass Tottenham, 49.7 miles from the start, in 51 min., and is 26 min. faster than now. Between Liverpool Street and Cambridge the times, as a general average, are about 11 min. less than before, and here also there is a better spacing out of the trains.

On Saturdays the Cambridge line is to be used to relieve the Colchester line to a greater extent than previously. Going down, there will be a 9.9 a.m. from Liverpool Street to Yarmouth Vauxhall, calling only at Cambridge for water, bypassing Norwich by the Wensum curve and reaching Yarmouth at 12.39 p.m.; also a 9.47 a.m. to Cromer, calling only at Cambridge and Wymondham to Norwich (12.36 p.m.); and the 10.50 a.m. "Holiday Camps Express," with a Cambridge water stop, and next stop Wroxham, via the Wensum curve. There will be similar up workings. In conclusion, it has been publicly stated that these radical improvements, involving the more intensive utilisation of locomotives and rolling stock made possible by the introduction of the "Britannia" class Pacifics, so far from increasing operating costs are expected to save £60,000 per annum.

### Training Footplate Staff for Diesels

AS the operating sphere of main-line diesel-electric units is extended, new experience is gained in the training of crews to man them, and every fresh approach to the problems involved may contain useful lessons for the future. An article in the June issue of our associated publication, *Diesel Railway Traction*, describes the reactions observed among a typical group of main-line engineers during conversion from steam to diesel. It has been found that there is more hesitancy among the older drivers in taking charge of main-line diesels than when only shunting duties are involved, because whereas the shunting driver is always close to a depot, the man on a main-line locomotive may have to cope in a remote spot with a fault in an admittedly complex assembly of mechanism. Imparting confidence and avoiding over-emphasis on the purely theoretical are therefore two primary considerations in planning an instructional course. Opinions vary on how far theoretical training should go. Wisely imparted, such instruction can be valuable in promoting confidence, but the problem of knowing where to draw the line in dealing with diesels is complex. Even if theory is minimised and an instructor confines himself mainly to teaching the sequence of events when controls are manipulated, the interaction of mechanical and electrical functions in a diesel-electric locomotive can involve lengthy explanations. One manufacturer's published description of a Bo-Bo of quite modest dimensions devotes some 300 words to the period between the driver pressing the "start" button and the engine firing. The goal to aim at is for a driver to know what should happen and be able to identify the weak link if the chain breaks down, not necessarily with the idea of putting it right himself but so that he can at least assist the maintenance staff in diagnosing and correcting a fault. This is the purpose of the theoretical instruction, and it has more tangible results to recommend it than the stimulation of interest and morale which are sometimes quoted almost disparagingly as its principal justifications.

Practical instruction in the locomotive itself, to familiarise the men both with the layout and the appearance of its component parts, is a recognised necessity before training in manipulation begins. It is important



that the natural eagerness to exploit the high availability of the diesel-electric locomotive should not cause this part of the course to be skimmed. It is pointed out in the article to which we have referred that using a locomotive for instructional purposes when it is stopped for maintenance at a depot may not cater for crews from distant points who will have to handle it in the course of its normal diagrammed duties. Instruction of this kind during running is necessary but cannot take the place of such training in a locomotive at rest because noise limits the amount of knowledge that can be imparted.

A diesel-electric locomotive provides more for the second man of the crew to do than can be found in a straight electric locomotive. Indeed, the article speaks of a readiness among firemen in acquiring knowledge of the locomotive which reflects their realisation that they are playing a useful part by observing the operation of the machinery while on the road. Often, it is said, the fireman's enthusiasm is greater than his driver's because the fireman may have had fairly recent training on internal-combustion engines in one of the Services. This is based on observation of a particular set of men and not put forward as a general proposition. In converting drivers to working electric locomotives for the Eastern Region Manchester-Sheffield-Wath scheme, it has been found that the older men pick up the technicalities as keenly as their juniors. Probably a governing factor in drivers' enthusiasm for diesel-electrics (or straight electrics for that matter) will be the type of service and the physical conditions they have experienced previously with steam locomotives. If these have been reasonably congenial, the diesel-electric merits such as comfort, cleanliness, and consistency of performance will be weighed against its complications. Much rests with the instructing staff in arriving at a verdict.

## Signalling Design and Maintenance Problems

**T**HERE can be few more onerous conditions under which mechanical and electrical devices have to operate than those applying to certain items of railway equipment, especially those connected with signalling and particularly when they are situated on the track, subject to all kinds of weather, exposed to dust, dirt, and damp, and extremes of temperature and continual vibration, often severe. This last is not only in itself destructive but makes it very difficult to keep fastenings tight and adjustments correct.

At the same time, these conditions are not favourable to ease of maintenance. Should anything become defective or out of adjustment it may have to be put right under every disadvantage of darkness and bad weather. This applies not merely to the simpler appliances known as mechanical signalling, but with even greater force to the more modern electrical or other power-operated devices. Point actuating mechanisms, detectors, rail contact treadles, track circuit rail connections, bonds, joints, and so on, are called on to give service, day in day out, under every disturbing condition met with on a railway. In the course of time, using the lessons of experience, the design of these items has been perfected continually and highly reliable equipment is now obtainable. Nevertheless it is no doubt possible to envisage still further improvement.

Besides the devices directly fastened to, or located alongside, the track, modern signalling includes a number placed in apparatus cases, along the line or in signal boxes, the accurate construction and careful maintenance of which are essential. Here again sound design and adaptation to function are of first importance. Quite small changes in the design of a single part have been known to effect a noticeable reduction in the number of failures in service, the elimination of which is the constant preoccupation of the signal engineer. After safe working the first consideration must be failure-free working, two aspects of one problem, but it has to be remembered that failure-free apparatus is not necessarily safe apparatus, a point to which at one time insufficient attention was paid. Many types of apparatus have, for example, been operated using circuits

themselves arranged on wrong principles, and have functioned apparently successfully; but they could at any time have given rise to "wrong side" failures, fraught with serious possibilities, had the insulation of such circuits become defective. Instances are on record of accidents arising in that way. Later, this became better realised and more attention was directed to this vital element of sound signal engineering.

Assuming, however, general conditions to be satisfactorily fulfilled and the correct working of a piece of apparatus, with minimum failure liability, to be assured, there yet remains the other requirement, meriting no less consideration, that it shall be as easy as possible to maintain it in working order. This is attainable only if all parts are readily accessible, and, strictly speaking, only completely when they are capable of rapid removal and replacement. This latter quality was not given originally the attention it is now receiving; but of late years it has become increasingly common in certain items of signalling equipment.

The detachable terminal board and plug-in connectors for relays, for example, have greatly facilitated the changing of items that have become defective, or are due for servicing, and eliminated the risk of mistakes in connecting wires and cables on such occasions. This principle is no doubt capable of being applied to other pieces of apparatus and probably will be as time goes on. The importance of the subject was emphasised in the paper by Mr. L. J. M. Knotts, read before the Institution of Railway Signal Engineers earlier this year, in which he commented on a number of features of power signalling equipment with suggestions for improving the design and operation of certain appliances now being more and more used.

Trailability of points, so much valued in certain Continental countries, was one of the questions referred to by Mr. Knotts. Originally adopted there because shunting movements were not signalled, making the risk of a run through comparatively great, it has been retained since the application of shunt signals, although involving certain complexities, because the ability to restore normal conditions in a few moments, should points be taken accidentally from the wrong direction, is felt to be valuable, especially at busy stations. To make points truly trailable, as distinct from being merely spring- or clutch-controlled, demands a form of construction hitherto unknown in Great Britain, but this could be more easily applied now that flat-bottom track has been standardised.

Another important point touched on was fault reporting. It is interesting to note that since nationalisation a uniform system, covering also the recording and analysing of all failures, has been put into force throughout British Railways. This should lead in due course to a much better understanding of the relative merits of the different types of apparatus inherited from the former companies, and even from their predecessors also. Whatever may be thought about the recent change of ownership, it certainly offers advantages in the way of technical simplification which ultimately must find expression in reduced working charges, and indeed the process has already begun. The growth of the application of electrical signalling, to which Mr. Knotts looks forward, makes several of the pleas he advanced particularly opportune at the present time. He mentioned also the facility afforded in the American press for exchange of information on the numerous problems that arise from day to day in operating and maintaining signalling apparatus. We have long thought this valuable and wished that something like it could be made available here.

**NEW L.M.R. ROAD MOTOR DEPOT.**—To keep pace with its growing fleet of road motor vehicles and trailers in London the London Midland Region is constructing at Kings Road, St. Pancras, a modern depot for overhaul and maintenance requirements. Up-to-date installations, including power washing and greasing equipment, hydraulic lifts, and overhead transporter runways will facilitate the work of inspection, overhaul, and painting, which will be carried out on a progressive system. A canteen and lecture room are included. The Region operates some 5,000 motor vehicles and trailers in the London district.

# LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

## A Faster London-Paris Service

SIR,—In Jules Verne's "Round the World in 80 Days" occur the following sentences taken from Phileas Fogg's diary:—

"Left London on Wednesday, October 2nd, at 8.45 p.m.: arrived in Paris Thursday, October 3rd, at 7.20 a.m. Left Paris Thursday, October 3rd, at 8.40 a.m.: arrived via Mont Cenis in Turin Friday, October 4th, at 8.35 a.m."

This took place in 1872. The accuracy of Jules Verne's figures is well known, so that there is no reason for doubting the above figures.

If Fogg had made his famous bet on October 2, 1952, he would have taken the Train Ferry service from Victoria at 9 p.m., arriving at the Gare du Nord at 9 a.m., too late to catch the 8.10 a.m. Modane express from the Gare de Lyon. He would have been obliged to wait till the 7.50 p.m., reaching Turin at 6.50 a.m. the following morning, 15 min. later than in 1872. The increase in the time spent in Customs formalities and the bad connections have annihilated the benefits derived from technical progress.

Developing this comparison, I set out below the winter services operating between London and Paris via Dover and Folkestone in 1912 and 1952. I think it will be agreed that this reveals a notable decline.

LONDON-PARIS SERVICES via DOVER AND FOLKESTONE AT OCTOBER 16, 1912, AND OCTOBER 5, 1952, COMPARED

|            | 1912        | 1952 | 1912        | 1952 | 1912              | 1952        | 1912        | 1952        |
|------------|-------------|------|-------------|------|-------------------|-------------|-------------|-------------|
| London     | hr.min.     |      | hr.min.     |      | hr.min.           | hr.min.     | hr.min.     | hr.min.     |
| Dover      | 9.00        |      | 10.00       |      | 11.00             | 11.00       | 14.20       | 14.00       |
|            | 11.05       |      |             |      | 13.00             | 12.32/12.57 |             |             |
| Folkestone | No          |      | No          |      |                   |             | 16.10       | 15.38/16.15 |
|            | service     |      | service     |      | 14.20/14.15/15.05 | 14.37       | 17.40/18.17 | 18.17       |
| Calais     | 12.30/13.15 |      | 13.25/14.12 |      |                   |             |             |             |
| Boulogne   |             |      | 17.20       |      | 18.45             | 18.08       | 21.16       | 21.34       |
| Paris      | 16.45       |      |             |      |                   |             |             |             |

It is submitted that the following proposed service is one to aim at, and would be readily practicable:—

PROPOSED LONDON-PARIS SERVICE

|            | hr.min.     | hr.min.     | hr.min.     | hr.min.     |
|------------|-------------|-------------|-------------|-------------|
| London     | 8.20        | 11.50       | 14.40       | 17.00       |
| Dover      |             | 13.15—13.40 |             | 18.25—18.50 |
| Folkestone | 9.40—10.05  | 15.00—15.15 | 16.00—16.25 | 20.10—20.25 |
| Calais     |             |             |             |             |
| Boulogne   | 11.35—11.50 | 18.25       | 17.55—18.10 | 23.35       |
| Paris      | 14.30       |             |             |             |

### SHIPS

#### FRENCH :

|        |       |        |       |
|--------|-------|--------|-------|
| Calais | 11.40 | Dover  | 13.00 |
| Dover  | 13.40 | Calais | 15.00 |
| Calais | 15.40 | Dover  | 17.00 |
| Dover  | 18.50 | Calais | 20.10 |

#### BRITISH :

|            |       |            |       |
|------------|-------|------------|-------|
| Folkestone | 10.05 | Boulogne   | 11.35 |
| Boulogne   | 13.25 | Folkestone | 14.55 |
| Folkestone | 16.25 | Boulogne   | 17.55 |
| Boulogne   | 19.25 | Folkestone | 20.55 |

I am informed that when later this year the strengthening of the track between Amiens and Calais permitting the use of the "241 P" class engines has been completed, these proposed running times with trains of up to 600 tons weight will be easily managed.

A reduction in the present best running time of 92 min. to 85 for the 78.3 miles between Victoria and Dover and proportionately on the Folkestone run is also postulated: this would be the more possible by the use of more "Merchant Navy" class engines, originally designed for these services.

The length of time needed these days for Customs examination is one of the things threatening to kill the rail and road service. If the examination cannot be carried out on the trains here, time would be saved by having the passport examination effected on the train, and more

examiners might be employed. In the proposed service the same time has been allowed for the Customs examination as in pre-war days; passport examination would be carried out on the train.

Yours faithfully,  
H. COLYER-FERGUSON

61, Onslow Square, S.W.7

## Diesel and Steam Locomotives Compared

May 19

SIR,—Interested followers of this correspondence will be indebted to Mr. E. C. Poultny for his enlargement of the meagre data previously available in this case.

When he says "for both locomotives the balancing speed is 100 m.p.h." it would be quibbling to suggest that for the steam it would appear to be about 103 had he himself not referred to "the slightly more power output" of the steam locomotive. There is perhaps a special reason for not awarding full honours to steam in accordance with the photo-finish which his diagram seems to furnish.

Intersection of the dotted curve (h.p. for train) is taken as for the 15 cars only (900 English tons) and the reading 3,650 d.b.h.p. as permitting the derivation of 15.2 lb. per ton as the resistance of the cars at 100 m.p.h. Is this value not low, not so much in itself as relatively to the 10.4 lb. at 60 m.p.h. similarly deducible, even having regard to the lowering of the average resistance per ton with the length of the train? Unfortunately I am unable to refer to your issue of August 4, 1939, in which an article dealt with train resistance at high speeds. However, I came across a similar diagram comparing rail horsepower required with that available to a steam, and an electric locomotive, as well as a diesel-electric, but only in respect of a 588-ton gross train, which illustrated my point:—

| m.p.h.                       | d.b.h.p., dotted curve (900 tons) | r.h.p., 588 tons gross |
|------------------------------|-----------------------------------|------------------------|
| 30                           | 750                               | 360                    |
| 60                           | 1,500                             | 1,200                  |
| 70                           | 1,900                             | 1,740                  |
| 80                           | 2,400                             | 2,335                  |
| 84                           | 2,700                             | 2,650                  |
| 90                           | 3,000                             | 3,095                  |
| 100                          | 3,650                             | —                      |
| Ratio 90 m.p.h. to 60 m.p.h. | 2 : 1                             | 2.58 : 1               |

Assuming that a two-unit diesel curve was also shown on your diagram, its reading at 84 m.p.h., when balancing speed was achieved therewith at that speed, could be assumed as two-thirds of 4,200 h.p., the reading with three-units; that is, the third unit would have added 1,400 h.p. But the requirement according to the curve is 950 h.p. greater at 100 than at 84 m.p.h. Yet nothing is available for acceleration on balancing at 100 m.p.h. Does not this tend to support the suggestion that a more sharply rising dotted curve might more closely represent the required h.p. for the train? For this to intersect the output curve on the 100 m.p.h. ordinate it would follow that the former would have to be raised to record the one-hour rating of the three diesel unit instead. It is quite improbable that the feat was thus accomplished, particularly as the average acceleration was only about 0.66 miles per sec., which, at the mean speed, called for nearly 2,000 h.p.

When it is considered that the corresponding figure for the steam train was 0.1 m.p.h. per sec., or more than 60 per cent greater, it was certainly a triumph for the veteran prime mover.

Yours faithfully,  
A. L. JONES

P.O.B. 546, Haifa, Israel

## THE SCRAP HEAP

### Affection from the Footplate

An engine-driver came into the compartment I shared with Commissioner Lord, Bishop Cooper and Monseigneur Thomas Quinlan. The engine-driver was very drunk, and very friendly. He sat between the Bishop and the Commissioner and, embracing the latter, kissed him repeatedly all over his head. . . .

Next day he came to apologise. He hoped he had not offended us. He hoped that the Commissioner had not minded being kissed. I assured the engine-driver that Commissioner Lord had enjoyed every embrace. Then we had a long talk. . . . He was a Ukrainian who had gone to school for seven years, then to a railway training establishment for three. After two years' apprenticeship he had become a fully-fledged engine-driver. His salary was 1,200 roubles a month. For fuel economy and running on time, he said, he received a monthly bonus of 600 roubles, handed to him at a ceremony with a band playing, red banners, speeches and vodka.—*Philip Deane of "The Observer" describing his repatriation journey from Korea.*

### Early American Woodburner Preserved

The old woodburning 4-4-0 locomotive illustrated was one of the earliest on the Central of Georgia Railroad, U.S.A., where it remained in passenger service until 1912. Its history has been sent us by Mr. A. J. Richards, who tells us that from that date, when it was sold to the W. T. Smith Lumber Company, until 1941 it was employed on log and timber hauling duties at the company's plant at Chapman, Alabama. After being withdrawn in 1941, and lying idle for some time, the company decided to recondition it and place it on permanent public exhibition as a locomotive of historical interest. The engine was accordingly overhauled, repainted, and placed on a short length

of track alongside the Montgomery-Mobile highway, U.S. 31, at Chapman, Alabama, close to the company's logging line, where it is shown in the illustration.

### The Individualist

A friend of mine, much in the world's eye, pursues conduct which he regards as logical with an inflexible disregard for "public opinion." . . . The particular act I have in mind relates to his technique when travelling not by road, but by rail. He will then enter a railway carriage and (a) open the window, and (b) put up his umbrella, to the astonishment of his fellow-travellers.

This procedure is nevertheless, he claims, rigidly logical, and should excite no surprise at all. "You open the window to let in the air; you put up your umbrella to keep out the smuts." I can see no answer to this.—*From an article by Lord Asquith of Bishopstone in "The Daily Telegraph."*

### Snowbound Trains in May

The incidents of railway transit this week on the lines west and north-west of Sheffield are quite suggestive of the published records of the famous marine adventures in search of the north-west passage. The Huddersfield passenger train left Sheffield as usual at 7.35 on Monday evening, and having the advantage of following in the wake of a powerful goods engine the train worked its way through the snow without much difficulty as far as Penistone, a distance of 13 miles. Diverging at this point from the main line of the Manchester, Sheffield, and Lincolnshire Railway, and proceeding on the Huddersfield and Penistone branch, the further progress of the passenger train was greatly impeded by the snow, which was very deep. When it had travelled on the branch about a mile the train came to a dead lock. The conductors alighted, and found that the snow was about a yard in depth. All efforts at further

progress proving futile, they conducted the passengers—some 14 or 15 in number—back to Penistone, the guard, engine driver, and fireman piloting the way with their lamps. The passengers found solace at the inns, but the three poor fellows who had led the van, acting under a stern consciousness of duty, trudged back to the snow-bound train. . . . The 3 p.m. train from Sheffield to Manchester entirely failed to accomplish the journey. It fought its way as far as Penistone, but the snow was so deep that the engine was not of sufficient calibre to continue.—*From "The Times" of May 16, 1853.*

### Veteran Ducal Driver

*Le Monde* has reported that when the "Blue Train" ran into Calais recently, the Duke of Saragossa stepped down from the footplate of the locomotive. The Duke, who is now 78, is the world's oldest amateur engine driver. He has kept records of all his journeys, which show that he has travelled 2,000,000 miles on the footplate. As befitted one of Spanish royal lineage, the Duke was fond of driving royal trains of which he drove 254 in all. He is particularly proud of having driven a locomotive from Paris to Le Mans, a distance of 132 miles, in 1 hr. 49 min., at an average speed of nearly 73 m.p.h.—*From "Le Monde."*

### June Diary

Summer is i-cumen in,  
With a face-lift for the station;  
Cricket Tests are in the offing  
(And, of course, the Coronation).

Headaches in the offices  
Call for much aspirin-ation,  
What with Whitsun and the Derby  
(And, of course, the Coronation).

There's a slap-up Naval "do"—  
A magnificent occasion;  
There's the Fleet lit-up at Spithead  
(And, of course, the Coronation).

Ceaseless calls for still more trains  
Cause H.Q. much cogitation—  
Week-end rushes, Ascot specials  
(And, of course, the Coronation).

Boats and planes and trains pour in,  
Full of guests from many a nation,  
Come to sample Britain's beauty  
(And, of course, the Coronation).

Every day the tension grows,  
Straw-haired men seek lubrication,  
Programming for all and sundry  
(And, of course, the Coronation).

Yet, though railwaymen may moan  
In this time of tribulation,  
They will cope with all the extras  
(And, of course, the Coronation).

Transport Acts may add somewhat  
To the general perturbation,  
But, why worry? June is with us  
(And, of course, the Coronation!)

A. B.  
E 2

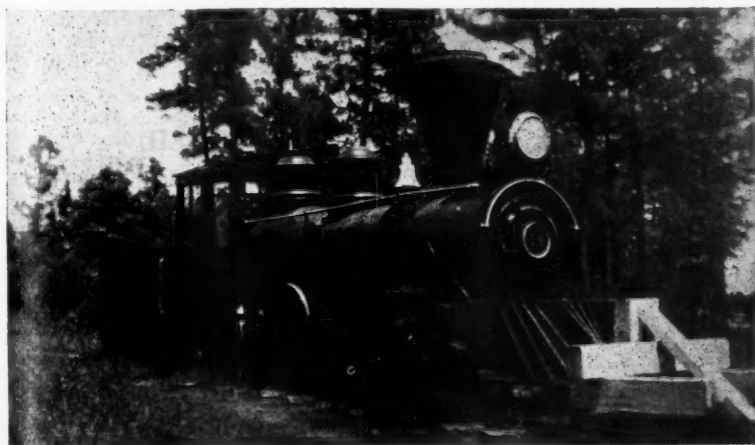


Photo.]

[L. Jarvis

Former Central of Georgia woodburning 4-4-0 locomotive preserved by the lumber company with which it passed the last years of its working life



## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### SOUTH AFRICA

#### New Rolling Stock

During January and February, 19 new locomotives (15 class "S2" shunting engines, two electric shunting engines, two class "4E" electric units) six second class coaches and 311 goods vehicles were placed in service. Of the wagons 266 were built by a private firm, and the remainder in railway workshops.

### CANADA

#### C.N.R. Mobile Museum

On April 26 the Mayor of Montreal inaugurated the Canadian National Railways museum train which will be shown eventually throughout Canada and parts of the United States.

After the introduction by Mr. M. A. Metcalf, Vice-President and Executive Assistant, C.N.R., the mayor handed train orders for "all points of the Canadian National System with historic right over all trains" to a veteran engine driver riding in the cab of the first locomotive.

The ceremony marked more than three years of intensive research to prepare the only mobile museum of its kind in the world. It has three old locomotives, a coach of 1860, dining car of

1875, sleeping car of 1890 and three baggage cars. The oldest locomotive of the three is No. 40, one of the last wood-burning engines and the first standard-gauge engine ordered by the Grand Trunk Railway in 1872. Locomotive No. 247 is a saddle tank shunter of 1894 and No. 674 a Mogul built in 1899 and the oldest locomotive still in service.

The sleeping car features the ornate designs and carvings of its period, and the dining car of 1875 produces silverware from five pioneer lines, now part of the C.N.R. The coach of 1860 has oil lamps, a stove at each end, and luggage racks to hold the carpet bags used at that time.

In July the train will run over the old St. Lawrence & Atlantic Railway from Montreal to Coaticook, and possibly, Portland, Maine.

### UNITED STATES

#### Withdrawal of Railcar Service

The first adverse report on the new 85 ft. diesel-hydraulic railcars which are proving so successful on other lines comes from the New York Central System. On April 26 this company withdrew the two cars which had been operating three return trips daily over the 146 miles between Syracuse and

Buffalo, in 2 hr. 40 min. with intermediate stops at Clyde, Lyons, Newark, Rochester and Batavia. It was hoped in this way to attract traffic from the roads, but enquiry showed that most of the passengers using the new services normally were passengers using the regular long-distance trains.

Eight other runs made by similar cars on the Boston & Albany subsidiary of the New York Central, between Albany, Pittsfield, and Chatham, which it was proposed also to discontinue because they had not attracted the expected revenue, have been retained for the time being as the New York State Public Service Commission will not sanction the withdrawal before a public hearing on the case. These withdrawals in no way reflect on the efficient working of these cars; it is of interest, in this connection, that the Baltimore & Ohio has ordered three further 90-seaters, to be used as a single multiple-unit train providing for six additional round trips daily between Pittsburgh and McKeesport, and two between Pittsburgh and Versailles.

#### Road Trailer on Flat Wagons

Co-ordinated railway-lorry service, with fast long-distance freight trains carrying road trailers on specially-equipped 70-ft. flat wagons should be one of the greatest advances in the railway field in the foreseeable future, according to Mr. Lewis K. Silcox, Vice-Chairman of the New York Air Brake Company, in a lecture at Northwestern University, Chicago.

Lorries would pick up full loads at two or three stops and immediately transfer the trailer to a suitably-built side-loading flat wagon, which would carry it to its destination without the delay that would ordinarily be encountered by a similar consignment in all-rail or all-road movement, he said. There was no economic reason for having railway service to every hamlet. Both railways and road carriers could increase their profits by co-ordinating their services.

### BRAZIL

#### Rio de Janeiro Underground

After some years of negotiations between the Rio de Janeiro municipality and various European companies, agreement has been reached with the Société Générale de Traction et d'Exploitation, Paris, which will work out the technical project for a proposed underground railway about 14 miles long. The company concerned is an offspring of the former Paris Metro, several of whose engineers are retained as advisers. Recent innovations of the Paris Metro may be introduced into the Rio de Janeiro project, including the use of rubber-tyre light alloy trains.

#### Transport in a Tropical Island Colony



Photo)

[F. H. Worsfold

Kitson 0-6-2 tank built in 1902 leaving Port Louis Central on Mahébourg train, Mauritius Government Railways. The chaired track, laid to standard gauge, will be noted

## ITALY

### Modernisation in South

The amount of 11,400 million lire has been placed at the disposal of the State Railways as first instalment of a five-year plan of 75,000 million lire for the improvement and partial electrification of a number of railways in the south. The most important part of this scheme is the doubling of the main line from Battipaglia to Reggio Calabria, on which new signalboxes will be built and the stations enlarged and remodelled. Improvements will also be carried out on the line between Reggio Calabria and Metaponto, where crossing loops will be extended and bridges strengthened. Similar improvements are to be carried out on the northward extension of this line from Metaponto via Taranto to Bari. The line from Bari to Foggia is to be electrified, and the next section, Foggia-Termini, improved.

### Progress of Reconstruction

The Ministry of Transport has issued a statement giving details of the lines, with their mileage, which were damaged during the war and have not yet been reconstructed. They include both sections of the State Railways and secondary lines. A number of uneconomic lines is not likely to be reopened. Reconstruction of the following lines is in hand: Trequanda-Asciano (8 km.), Vairano-Isernia (46 km.), Roccaraso-Carpinone (76 km.), and Florence-Marradi (66 km.). Work on other lines has been deferred because of lack of funds.

## SWITZERLAND

### New Yard at Lausanne

The construction of a new marshalling and goods yard to the west of Lausanne main station had progressed sufficiently to enable the full wagon-load section, and those handling smalls and express loads to be opened on May 17. The yard, which is known as Lausanne-Sébeillon, extends as far as Renens, the junction of the Geneva-Lausanne and Neuchâtel-Lausanne main lines, just over three miles west of Lausanne. It replaces the yard which adjoined Lausanne station on the west, and the site thus released will be used for the rearrangement of passenger train and coach sidings. The Lausanne-Ouchy line and the Lausanne tramways which operate goods services are to be connected with the new yard.

## FRANCE

### Containers from North Africa

Reference has been made from time to time to the importance to the S.N.C.F. of perishable and other traffic arriving from North Africa in containers. The port of Marseilles recently adopted a new charging scheme for this traffic, which is likely to assist its development. The port charges will be

based on the gross weight of the container and contents, irrespective of the nature of the contents. Two scales exist, one for containers with a cubic capacity of less than 353 cu. ft. and one for larger containers. The tonnage rates decrease as the number of containers in a consignment increases.

### Wagon User

The steady improvement in wagon capacity and in wagon user on the S.N.C.F. is illustrated by the changes in freight ton-km. related to the changes in wagon stock. Thus, the wagon stock in 1938 amounted to 508,100 units; it had decreased to 422,700 by 1951 and 409,400 by 1952. The number of ton-km. of freight traffic in 1938, 1951 and 1952 was respectively 26,500,000, 45,400,000 and 44,300,000. In 1938 the number of ton-km. per wagon in service was 56,100; the corresponding figures for 1951 and 1952 were 110,100 and 122,300 respectively.

### Punctuality of Trains

During 1952, it is claimed, 85 per cent of express (*rapides* and *express*), 85 per cent of local and stopping (*directs* and *omnibus*) and 92 per cent of Paris suburban passenger trains arrived at their destinations on time. Of the remainder only four per cent of express and 2.2 per cent of local and stopping trains were more than 15 min. late; in the Paris suburban area under 1 per cent was more than five min. late.

Freight trains also showed very favourable results, 87.6 per cent of parcels (*messageries*) and 80.4 per cent of slow goods (*petite vitesse*) trains arriving on time.

## BELGIUM

### Cie. Internationale des Wagons-Lits

The net profit for 1952 of the Wagons-Lits Company (which is registered in Brussels) was B. frs. 45,299,280 exclusive of the balance of B. frs. 2,627,481 brought forward from the preceding year. The net profit was approximately 13 per cent higher than that for 1951. A dividend of B. frs. 5 is to be paid per privileged share (unchanged) while the dividend of B. frs. 5 to be paid on the ordinary shares represents an increase from B. frs. 4 net paid for 1951. In the accounts for 1952 the amount set aside for taxation and the balance carried forward total B. frs. 13,461,797.

### Progress of Electrification

Cables are being laid between Schepdaal and Denderleeuw on the Brussels-Ghent section. Between Bruges and Ostend the foundations for the overhead structures are almost complete. Equipment is being installed in the substations at Ghent, Denderleeuw and Brussels Midi.

On the Brussels-Liege line resignalling is in progress between Schaerbeek and Diegem and level crossings have been abolished or are being abolished at

Diegem, Kortenbergh, Erps-Kwerps, and Herent. Improvements have been carried out at Etterbeek and Mont-St-Guibert on the Brussels-Namur line.

## AUSTRIA

### Salzkammergut Lokalbahn

Negotiations are reported to be in progress for obtaining funds for electrification and modernisation of the narrow-gauge Salzkammergut Lokalbahn, which runs from Salzburg to Bad Ischl, some 40 miles, with a short branch from St. Lorenz to Mondsee. Bad Ischl is on the electrified Federal Railways branch from Attnang-Puchheim to Stainach-Irdning. Besides electrification, the capital is to be used for rolling stock so as to put the railway in a better position to compete with bus services. The S.K.G.L.B. Company itself operates road services and steamers on the Wolfgangsee.

### Russians Approve Use of Wireless

The Russian authorities recently withdrew their ban on wireless for shunting and other railway uses. It is now possible for the Federal Railways throughout Austria to go ahead with plans involving use of wireless in marshalling yards, depots, and stations.

## FINLAND

### Passenger Traffic with U.S.S.R.

Normal passenger and express parcels traffic between Finland and U.S.S.R. has been resumed, with through bookings between Helsinki and Vainikkala in Finland on the one hand, and Viborg, Leningrad, and Moscow on the other. Only coupon booklet tickets are issued, obtainable from travel agencies such as Intourist in Russia and the Finnish State Railways travel bureau (VR Matkapaalvelu).

Sleeping cars and baggage and parcels vans work through between Helsinki and Leningrad; they are provided by the U.S.S.R. railways.

### Diesel Traction

Some 30 per cent of the State Railways steam locomotives were reported recently to be under or awaiting repairs. Steam locomotives are on order from Finnish and foreign builders, but experience with diesel traction has led to consideration of further dieselisation. Delivery had been made last year and in the past few weeks of 20 diesel railcars, and two heavy six-wheel 40-ton and of three eight-wheel 52-ton diesel shunters is expected during the summer. Five diesel motor cars are to be obtained in 1954 and the programme provides for diesel railbuses.

The 1953-57 five-year dieselisation plan includes obtaining fifteen heavy duty and 32 shunting locomotives, fifteen 300-600 h.p. and fifteen 600-900 h.p. motor cars, 50 100-300 h.p. railcars, and 30 railcar bodies.

## PUBLICATIONS RECEIVED

**Bristol on the Move.**—London: British Transport Commission, 55, Broadway, S.W.1. 9½ in. x 7 in. 46 pp. Illustrated. Price 10s. 6d.—The Bristolians and the way they travel about their city were investigated by the British Transport Commission during the winter of 1950-51. There was a precedent for this in the London Travel Survey of 1949, the results of which were published in 1950. The area surveyed contained at the time approximately 564,000, and the public road transport services are maintained by the Bristol Tramways & Carriage Co. Ltd., a Tilling company which is part of the B.T.C. organisation. It is revealed that in Bristol 42 of every 100 workers use public transport in the course of their journey to work, compared with 58 in London. Proportionately twice as many persons in Bristol as in London use their cars to travel to work, although the proportion of the population of both cities owning cars is about the same.

**Locomotive and Train Working in the Latter Part of the Nineteenth Century.** Volume 4. By E. L. Ahrons. Cambridge: W. Heffer & Sons Ltd. 9 in. x 6 in. 127 pp. Illustrated. Price 15s.—The fourth volume of these articles reprinted from *The Railway Magazine* deals with the Great Western, Cambrian, Brecon & Merthyr, Taff Vale, Rhymney, Barry, and Midland & South Western Junction Railways. All are the subject of instructive and entertaining reminiscence presented in the style that has made Mr. Ahrons' articles much-quoted specimens of railway literature. The opening chapters, on the G.W.R., cover the last 10 years of the broad gauge as well as the standard gauge period. Of this system Mr. Ahrons wrote, speaking from his contemporary standpoint, "it may be stated with impartial fairness that the Great Western Railway is now at the front in everything that appertains to excellence in railway working." But he adds that "old stagers" revisiting the line would consider that it had "gone to the dogs utterly without redemption." Sentiments of this kind are still familiar in connection with railways and do much to explain the unflinching interest of railway books of a retrospective kind such as this.

**Gleisbildstellwerk Dr. S. (Siemens' Push-Button Relay Interlocking Panel Apparatus).** By G. Rehschuh. 11½ in. x 8½ in. 14 pp., 23 figures. Reprinted from *Signal und Draht*, August, 1952. Issued by Siemens & Halske A.G., Brunswick (20b), Germany.—This reprint gives a complete general account, short of actual circuit diagrams, of the Siemens & Halske type of relay interlocking panel installations, to which reference was made in an article in our August 15, 1952, issue. Many of these installations are now in service on the German Federal Railways and on some

non-German lines. The author, as head of the research department of the manufacturers, has had exceptional experience with the design and development of this equipment which already has enabled the working of many stations in Germany to be greatly improved. Developments leading up to the production of the "Dr. S" system are outlined and the principles on which it has been built fully set forth, with illustrations of typical layouts, one in Luxembourg. The illustrations show forms of panel, with their unit parts, relays of different types, relay assembly units, apparatus, and cable rooms and related items, the leading features of the designs being mentioned.

**A Year's Work.**—The British Iron & Steel Federation has recently issued Volume 4, No. 1, of *Steel News*, which is largely devoted to some of the principal matters covered in the Federation's 1952 report; also scrap production, home and foreign ore production, and a table showing planned and achieved steel output for the years 1946-1952 and 1953. Also included are details of the new radio-telescope, the steel for which is being supplied by the United Steel Structural Company. Another feature is a brief history of the growth of Middlesbrough from 1828 up to its present eminence in the steel industry.

**Klinger Water Level Indicators.**—Richard Klinger Limited, Klingerit Works, Sidecup, Kent, has published a revised and expanded edition of the level gauge section of its catalogue. This new section contains full details of the company's water level indicators, double plate water level gauges, water gauge columns, and so on. Also included is a description of Klinger level gauges for the oil industry, such as the type "U" and type "K" reflex gauges, the type "J" and type "JA" double plate gauges, level gauges for liquefied gases (Hubbard patent) and high-pressure reflex level indicators for working pressures up to 6,000 p.s.i.

**Woodhead-Monroe Shock Absorbers.**—Technical information relating to Woodhead-Monroe fluid-action shock absorbers for railway rolling stock is given in an illustrated brochure, No. 6, recently issued by Jonas Woodhead & Sons Limited, Kirkstall Road, Leeds, 4. Sectional drawings are included which show clearly the construction and assembly of the unit, together with its function of control, which in addition to the control of bolster and suspension springs can, by the many valve arrangements available, be used to control a spring or swinging member in the vertical or horizontal plane. In addition to the technical information, a table shows the results obtained during tests carried out at the Waugh Laboratories of New York, testing house for railway equipment, who carried out practical tests for which purpose the shock ab-

sorbers were mounted to control the bolster springs of a 40-ton refrigerator car during a series of test journeys on the Pere Marquette line between Grand Rapids and Detroit.

**Timber Fireproofing Process.**—The Oxylene method of treating solid timber and plywood is described in a leaflet issued by the Timber Fireproofing Co. Ltd., which is accompanied by a report on the process prepared by the Department of Scientific & Industrial Research and Fire Officers' Committee Joint Fire Research Organisation. In this document the specimens of hardboard tested are placed in Class 2 as surfaces of low flame spread. The classification means that during the first 1½ min. of test the mean spread of flame was not more than 15 in. and the final spread did not exceed 18 in. Wood treated with Oxylene not only does not ignite, but is efficient for preventing the spread of fire. The process is one of impregnation and fixation, the timber being enclosed in a cylinder for the application of antipyrine and preservative chemicals, and then kiln-dried.

**The Use of Welding in Steel Building Structures.** prepared by a committee of the British Constructional Steel Association and published as Brochure No. 6 by the association at Artillery House, Artillery Row, London, S.W.1. 36 pp. 10½ x 8½ in. Illustrated.—The object of this publication is to give guidance on the design of metal arc welded building structures in mild and high-tensile steels under nominally static loading conditions and designed as simple frames. There are six sections, devoted to fillet and butt welds and their use in typical structural details, the design of a welded plate girder, the design of a welded plate crane girder, the design of welded built-up stanchions, general notes on the practicability of welding, and notes on drawing office procedure. All recommendations are based on British Standards and the introduction enumerates the advantages and economies secured by welding. The first four sections are amply illustrated with diagrams, and the whole work is a clear and precise exposition of the aspects of welding covered.

**French Railways Travel Literature.**—Publications issued by French Railways Limited, 179, Piccadilly, W.1, include pamphlets giving details of combined road-rail tickets and of international train cruises. An illustrated booklet "Catholic France," with a preface by Cardinal Gerlier, Primate of France, comprises brief notes on places of pilgrimage, cathedrals, basilicas, abbeys, and other buildings and localities associated with religious history and practice; a sketch map shows their location in relation to the main railway routes of the S.N.C.F.



## Signalling for French 50-cycle Electrification

*Choice of equipment to meet special conditions imposed by industrial frequency and high voltage*

THE forthcoming electrification of the important north-eastern main line of the French National Railways between Valenciennes, near Lille, and Thionville in Eastern Lorraine, on the a.c. 50-cycle system, has necessitated consideration of the various methods of signalling now in service there, and the means to be adopted, not only to meet the anticipated traffic requirements but also the special conditions arising from the use of this frequency for the traction circuits and the high voltage of 25,000 to be applied to the overhead contact wires.

The route is made up of sections of line originally belonging to three different administrations. These were the former Northern and Eastern companies of France, and the Alsace-Lorraine Railways, where for some 50 years German practice was the rule. The signalling arrangements had come to vary a great deal as between these sections. Some were equipped with the well-known Lartigue electro-semaphore manual block, widely used in some parts of France; others had automatic signalling controlled by track circuits, using on the older sections mechanical type signals, power-operated, and on the newer sections colour-lights, in some instances approach-lighted.

On the former Alsace-Lorraine lines the Siemens magneto-generator lock-and-block was in operation, as very generally in Germany today. The problems to be solved were both technical and economic and it had to be considered, bearing in mind the characteristics of the existing equipment, whether the better course would be to endeavour to modify that or to install something entirely new concurrently with the electrification.

### Modifications Required

Some interesting details of what is to be done were given in a recent issue of *La Vie du Rail*. It was found that to effect the necessary alterations to the Lartigue block would entail so much expense as to make it preferable to install automatic colour-light signalling, continuously lighted, the short length equipped with ordinary power-operated signals being modified to agree.

On the former Eastern line sections which had colour-light signalling, this will be modified similarly and the Siemens block on the old Alsace-Lorraine section will be replaced by the same kind of apparatus. The short section of Eastern automatic signalling having power-operated signals will for the time being be left as it is, except for essential alterations to the track circuits themselves, but on the longer section, between Audun-le-Roman and Barancourt, this signalling will be replaced by the new standard S.N.C.F. manual block, the traffic not justifying

the expenditure needed to adapt the installation to the new conditions created by electrification.

The new technical arrangements to be adopted are the result of prolonged experiment on the Aix-les-Bains to La Roche-sur-Foron line where the various problems arising from the adoption of the 50-cycle system were systematically investigated, and the necessary new signalling equipment put through a thorough test. All signalling circuits are to be carried in cables, laid either in conduits or directly in the ground, and kept separate from any telecommunication circuits. The colour-light signalling will be, as mentioned, constantly lighted, but the so-called continuity, or proving-at-red, circuit, hitherto so much favoured in France, will not be used, the risk it was designed to cover being now regarded as negligible. Should, however, a red aspect fail and remain dark, the next signal in rear will not be able to show anything less restrictive than "caution" or yellow.

Normally the lights will be fed from the a.c. signalling supply, with secondary battery standby. Line circuits, however, and related apparatus, will work on d.c., using the battery supplies acting as standby for the signals. The circuit arrangements for this type of signalling have been standardised for future installations and are the result of extensive experience, which began in the days of the independent companies, the former Eastern company in particular having been especially progressive in applying automatic signalling, following its use on certain heavily worked sections during the 1914 war.

### Track Circuits

Two principal types of track circuit will be used, single-rail d.c. and double-rail a.c. with impedance bonds. Experiments on the Aix line showed that the former could be used, with certain precautions, with 50-cycle traction, with 40 ohm double wound relays for circuits over 100 m. (109½ yd.) long, and 4 ohm relays for shorter lengths, no circuit exceeding, as a rule, 1,000 m. (1,093½ yd.). Fuses and discharge gaps protect the apparatus against damage. These gaps are provided at intervals between the rails along every track circuit, while the return, or non-insulated rails, where such exist, of each track of a double line are to be cross connected every 330 m. (361 yd.).

The track element of the double-wound d.c. relays is shunted by a permanent 40-ohm resistance and has an impedance in series with it. There is also a fixed series resistance, an impedance and an adjustable resistance in the feed to these circuits, which are fed from secondary batteries. It is not possible to use them where there is any

risk of interference from extraneous d.c., but tests showed that on 156 km. (97 miles) of route this could be done with safety.

The a.c. track circuits will have double-element relays and be fed from an 83½ cycle 2-phase supply, this frequency being produced easily by specially designed motor-generator sets. This supply will be used for the other equipments where a.c. track circuits are provided, but with d.c. circuits the local power supply of the district will be drawn on for the signals themselves. Where the old type signals, power-operated, are being retained, a.c. track circuiting will be put in and all control circuits be transferred to cables.

Although the new standard manual block, which operates on coded d.c., is not susceptible to false operation by interference from the traction circuit, inductive or otherwise, difficulties arise where it is desired to switch out a block post and the length of the through section becomes such that an undesirably high voltage can be induced in the circuits. It is then impossible merely to switch through in the manner hitherto adopted, and relaying arrangements have to be provided, to limit the length of the line circuits in the cables.

### Changes in Station Installations

Existing station installations will be modified where necessary so that no apparatus is left working on earth return and all interruptions in a circuit effected by relay or other contacts will be made double-pole. Insulations are to be inserted in both rod and wire mechanical transmissions, to separate both lever and function from them, the transmissions themselves being connected to the rails where the track circuits are d.c., or to earth where a.c.

It has been found possible to retain the present types of point machine, if d.c. detection is added, and the contacts in the motor circuits are made double-pole. At a number of small stations, where there is no direct entry into a loop, a simple system of key locking, a method of working finding considerable favour in France generally, will be installed, allowing the points to be operated locally on the ground by hand levers, released by keys issued from a central apparatus electrically interlocked with the signals.

**WITHDRAWAL OF GRAVESEND WEST BRANCH PASSENGER SERVICES.**—On and from Monday, August 3, passenger services will be withdrawn from the Gravesend West branch, Southern Region, and Longfield Halt, Southfleet, and Gravesend West stations will be closed to passengers. Frequent services in the area are provided by London Transport buses. The existing freight services will be maintained, except that Southfleet Station will deal with freight in full truck loads only from August 3.

## The New Koedoespoort Workshops, South African Railways

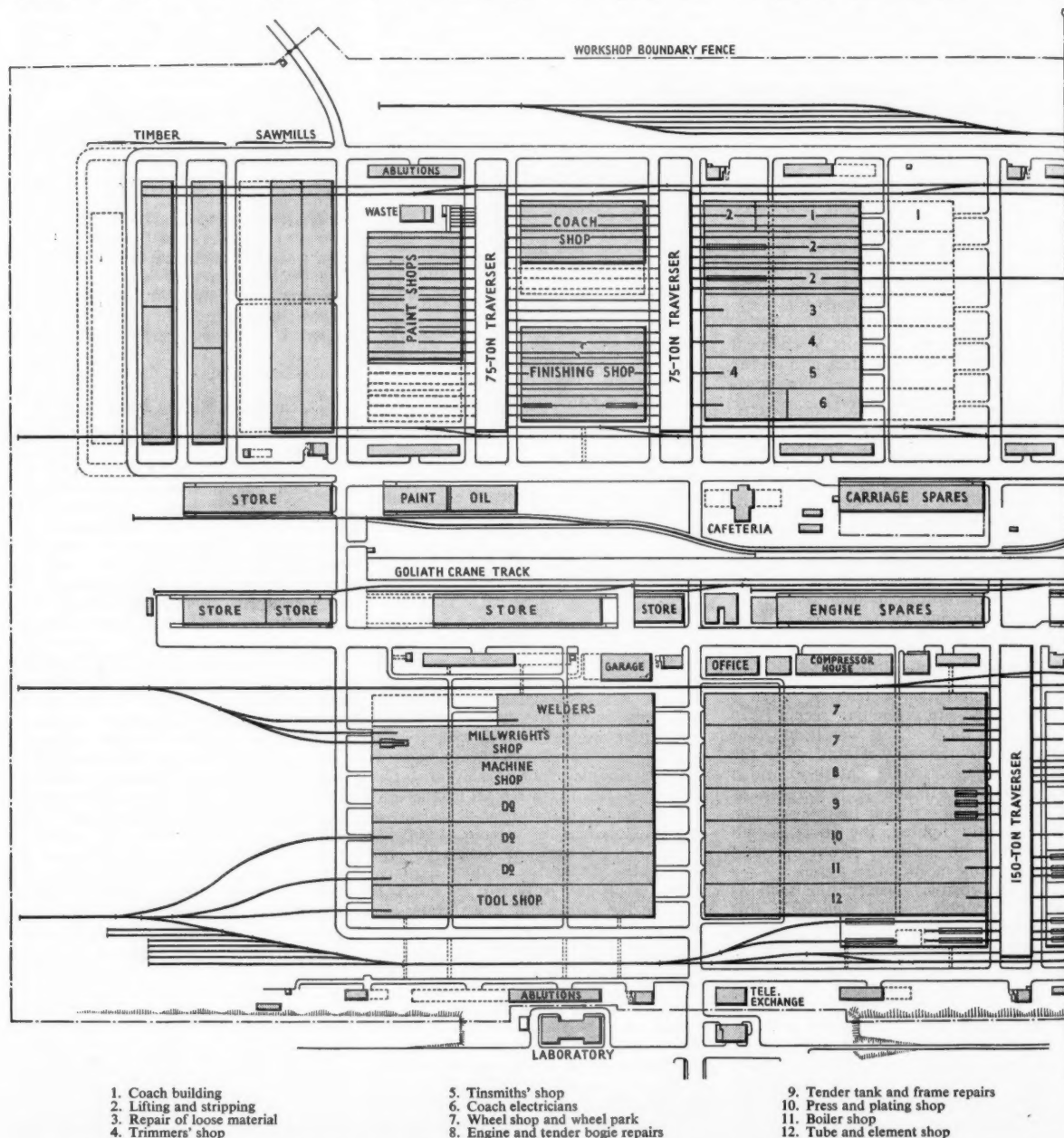
*Large-scale project dictated by great increase in locomotives and rolling stock*

AT Koedoespoort, near Pretoria, the South African Railways are constructing a new mechanical workshops which ultimately will cost some £10,000,000. The decision to build new workshops in key centres, extend some existing shops, and make improvements generally was prompted largely by the need to increase the carrying capacity of the railways. In 1951-52 the total tonnage conveyed was 24 per cent

greater than in 1947-48. During the last ten years the number of wagons has risen by 27,168, or 49.5 per cent. As a result repair facilities have lagged behind.

Almost without exception, major extension of existing shops is impracticable because of lack of space and peculiarity of layout. Several projects were therefore authorised, of which Koedoespoort is the largest. The site is over

200 acres, about seven miles north-east of Pretoria on the main line between the Transvaal and Portuguese East Africa. The new workshops, which will replace those in Pretoria, have been designed to turn out some 500 repaired steam locomotives a year. They will also have facilities for building and repairing coaching stock and ample capacity is being allowed for the manufacture of rolling stock and other spares. About



*Western part of workshops, including coach building and repair shops, and machine and locomotive repair shops*

5,000 workmen in all categories will be employed when the works are operating fully.

Construction has been undertaken in two stages, first the southern section comprising machine shops, erecting shops and boiler shops, subsidiary buildings, stores and sub-stations. Thereafter the northern section, comprising the coach building and repair shops, timber stores, sawmills and foundries, with stores, will be started. The main stores are situated between the northern and southern sections. In addition to serving the workshops of both sections,

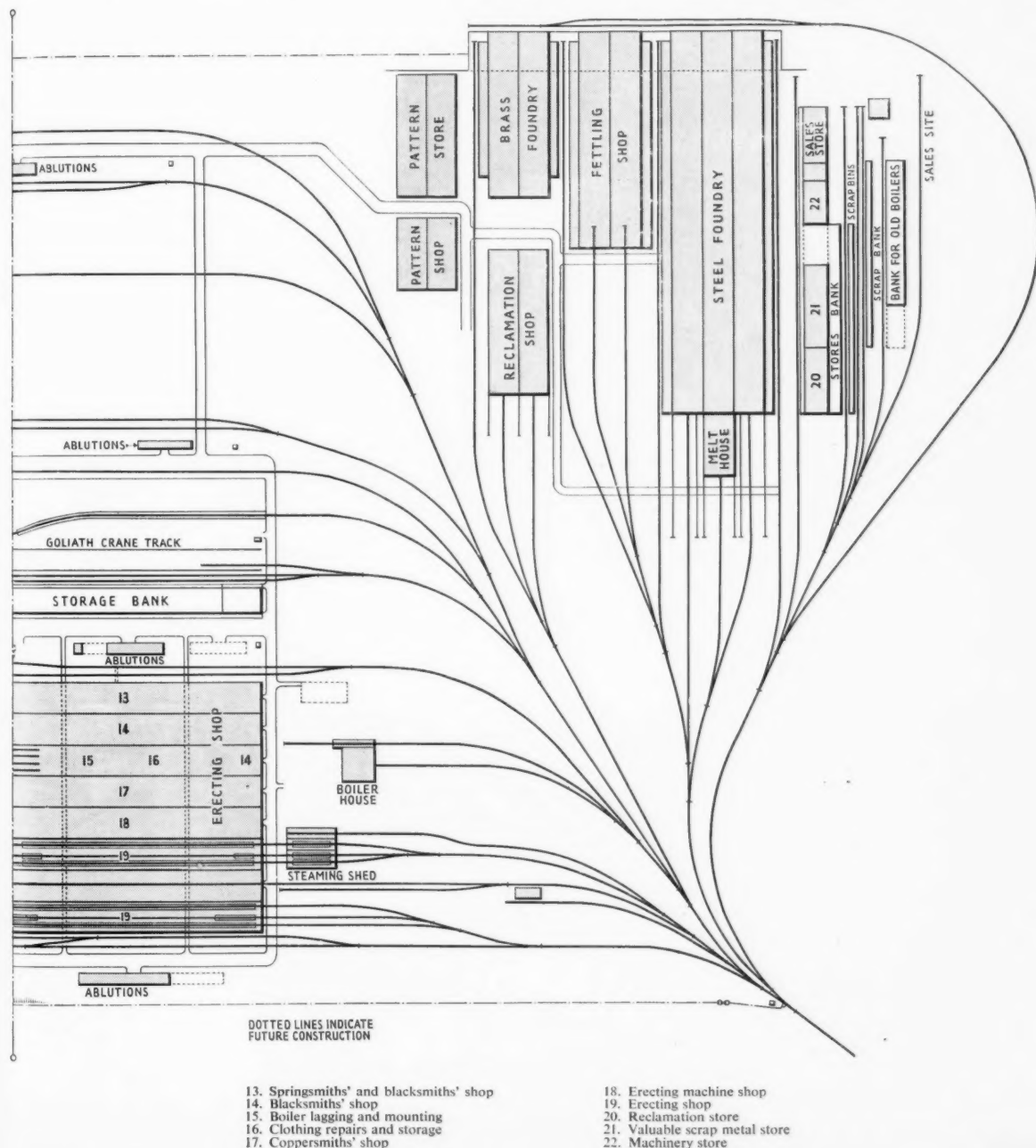
they will hold materials for, and issue to outstations situated throughout the Transvaal.

A high degree of standardisation has been achieved in the three, double monitor roof, steel frame, workshop buildings in the southern section. The building bays are all 75 ft. wide to column centres with columns spaced at 25 ft. centres longitudinally in the bays. "A" and "B" and "C" type bays can be built adjacent to one another in any combination of types.

"A" type bays—for locomotive erecting shops—carry 75-ton cranes at 25 ft.

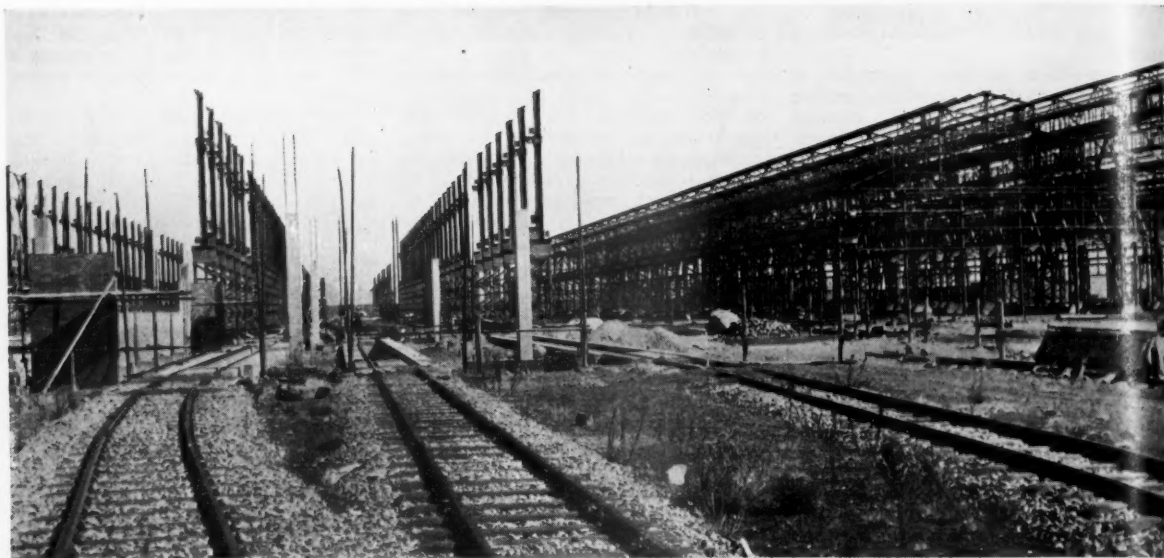
from the floor with a 7-ton crane 45 ft. above the floor. "B" type and "C" type carry 40-ton and 15-ton cranes at 33 ft. and 22 ft. above the floor respectively.

The roof structures in "A," "B" and "C" types are identical, with galvanised corrugated iron sheeting. The buildings have brick side and end walls to a height of 15 ft. above the floor with corrugated asbestos sheeting above this all round. Roller shutter doors are fitted to all the large doorways. The ample glazing of the full length of the bay monitors and large windows in the



Eastern part, showing erecting shops and foundries





*Erecting shop block under construction*

brick side walls give good natural lighting at the floor level.

Of the three buildings referred to, the largest consists of eight bays, two "A," one "B" and five "C" type. It houses the erecting shops, sorting and machine bays for locomotive, component repairs, boiler testing and mounting section, coppersmiths, blacksmiths, spring-makers and some smaller activities. These bays are all 675 ft. long and the total floor area of the building is 405,000 sq. ft.

To the west of the building housing the erecting shops and separated from it by a 150-ton 75-ft. wide traverser, is another building of similar dimensions housing boiler and boiler tube repairs. Bogies, tender tanks, and wheels will be repaired here also. In the south bay of this building the locomotives will be

completely stripped. The components will be cleaned and examined before their repair and re-assembly on the locomotives.

#### **Manufacturing Activities**

The manufacturing activities are concentrated mainly in the third building, which consists of seven "C" type bays. Toolmaking, brasswork manufacture, welding, production machine tools are housed in this building, in which also the millwrights and electricians responsible for plant maintenance throughout the works will have space allocated to house all the facilities necessary for their work. This last-mentioned building has been completely erected and partly equipped, and production work has now been started in a small way in the toolmaking shop.

Compressed air is generated in a compressor house 234 ft. by 48 ft., in which eight 2,000 c.f.m. and one 1,000 c.f.m. compressors can be installed. In the first place only six 2,000 c.f.m. and the one 1,000 c.f.m. machines will be installed; space has been allocated for the further two 2,000 c.f.m. compressors to be added.

An overhead 5-ton crane covers the floor of the compressor house for ease of maintenance of the machines. Circulating water for the compressors is cooled in a concrete cooling tower which can handle 50,000 gal. of water an hour.

Steam at 100 lb. per sq. in. for use in the blacksmiths shop and possible space heating arrangements in future is generated in three 25,000 lb. an hour water tube boilers situated in a boiler



*(Left) compressor house, with electrical substation in front ; (right) engine spares store, 500 ft. by 60 ft.*



*Part of the toolroom bay, with machinery in course of installation. Duckboards at machines are contained in recesses making them flush with the floor of the shop*

house just east of the blacksmith shop. The boilers are coal-fired by chain grate stokers and bunkering arrangements have been made to store 600 tons of coal and to feed it to the stokers through a system of conveyor belts and feed hoppers. Gas will be generated to provide fuel for blacksmiths' furnaces in two coke-fired retorts giving producer gas. To supplement this, water gas generators will be installed later.

Electric power supplied by the Pretoria Municipality is connected to Railway Boundary substation at 11,000 volts. In the main substation adjacent to the compressor house this voltage is reduced to 2,200, at which pressure the compressor synchronous motors are driven. A ring main system of nine substations is supplied at 2,200 volts and the low-tension system is fed at 400 volts three-phase for use in the machine tools and appliances.

All steam, air and gas pipes are laid in ducts adjacent to the roadways, the duct covers forming pavements for pedestrians. In the buildings the pipes are carried on brackets below the crane rails. Electric power cables are also laid in ducts in open areas.

Design work in the northern section

of the works is well advanced, but no construction work has begun.

#### Stores

The main stores area between the north and south sections of the works consists of two rows of buildings spaced 200 ft. apart. Between the rows is an open, paved storage area with overhead cranes. There are separate buildings for general stores, engine spares, carriage and wagon spares, electrical equipment, bagged materials, steel and iron, paints and oils, with a special building for receiving and despatching materials.

The design of building used is of interest in that the 60-ft. span, rigid arch steel-frame is designed for prefabrication by welding in the Administration's structural workshops. The arch is made in three sections, each of which can be transported as a normal load in a railway wagon. The three sections can be bolted together on site. Side and end walls are of brick, and the windows, with sills 8 ft. above the floor, are of ample size to give good natural lighting across the 60-ft. wide floor. The pitched roof is 21 ft. high at the apex and 16 ft. at the wall and is covered with galvanised corrugated iron sheet. The arches

are spaced 20 ft. apart and the buildings can be built to any length in multiples of this figure. Sliding doors 10 ft. wide provide access at different points on sides or ends.

The staff cafeteria and ambulance rooms are in the central area, and nearby are the central transport garage and production control offices. The main administrative offices are outside the works area adjacent to the south gate.

**WEST-EAST BERLIN THROUGH SERVICES.**—On May 18 the East Berlin authorities began to run "workers" expresses non-stop in less than 40 min. from Potsdam through West Berlin to Friedrichstrasse, in the Russian Zone. The compartment doors are locked during the transit of West Berlin. The trains concerned are 5, 6 and 7 a.m. from Potsdam and 5, 6 and 7 p.m. from Friedrichstrasse. The service is intended for Government servants and workers in State-owned undertakings who live in the Western suburbs and work in East Berlin, but no corresponding provision is made for those who live in the eastern and work in the western part of the city. It is stated that other trains which still run between East and West Berlin are to be more rapidly checked for escaping refugees.

## Repairing Unusual Slips on Western Region Main Line—2\*

### Repair works in progress

By John P. Slee, B.Sc.(Eng.), Civil Engineer's Department, Western Region

THE slip is assumed to be circular from ground level on the bank to a point vertically beneath the centre of the slip circle; as seen in Fig. 6 (shown in Part 1 of this article) this is a close approximation. It is the stability of the mass enclosed by the radii of this circle under discussion.

The forces acting on it are: the out-of-balance moment of the mass; the active resistance of the ballast (this value is taken as the ballast is likely to be disturbed during the course of day-to-day maintenance); the passive resistance of the clay between the sand layer and the ballast; and the resistance of the sand layer as a result of its shear strength.

These are the forces that applied at

subgrade is calculated, as demonstrated for Twyford, from the formulæ

$$P_{E1} = \frac{H}{2} \left( \gamma H \tan^2 \left( 45 + \frac{\phi}{2} \right) + 4c \tan \left( 45 + \frac{\phi}{2} \right) \right)$$

$P_{E1}$  acting at 53 ft. from the slip circle centre = 50,450 lb.

$$P_{E2} = W_B h_B H$$

$P_{E2}$  acting at 52 ft. from the slip circle centre = 2,880 lb.

The stabilising moment of the passive earth pressure equals:—

$$M_P = 2,820,000 \text{ lb.ft.}$$

(3) As was found in the calculations for the Twyford slip, the active earth pressure was negligible.

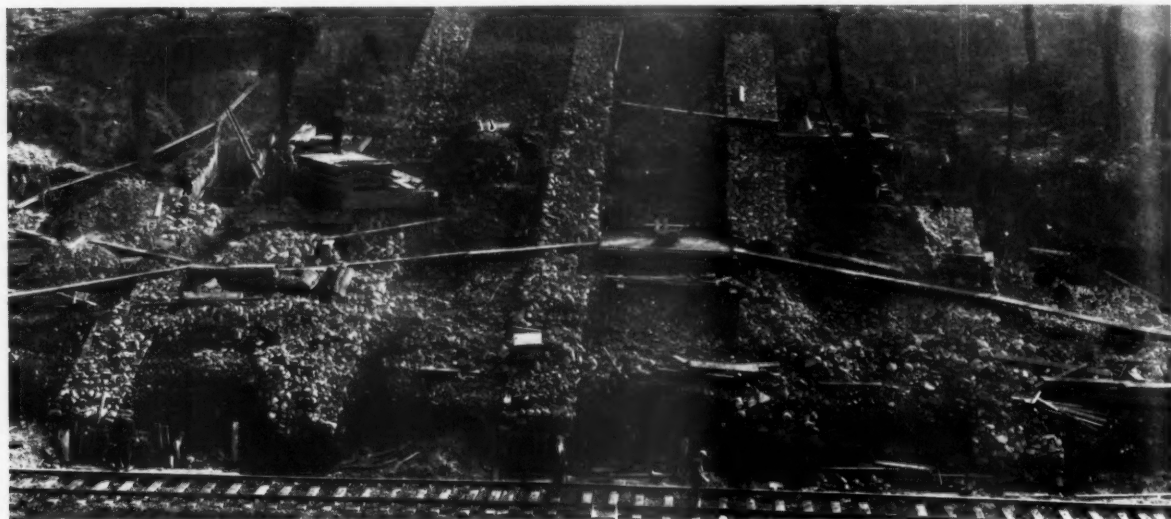
(4) To give a factor of safety of unity the moment of the shear strength

describe the works at Sonning first, as they were much greater in extent and cost, and describe those at Twyford by referring to differences between them and those at Sonning.

The cause of the slip at Sonning was known exactly and, paradoxically, this meant that the ways of dealing with it were numerous. The method decided on will be described and other methods, with the reasons for their rejection, touched on briefly afterwards. The object of this method was to fix the slipping mass to the solid stratum beneath.

### Buttressing

The means used were the construction of seven buttresses or keys, sufficient in size to withstand the force



Sonning Cutting, remedial work nearing completion

of the sand layer about the slip circle centre equals  $M_s$ .

$$M_s = M_B - M_P$$

$$M_s = 2,153,000 \text{ lb.ft.}$$

The length of the sand layer = 76 ft. and its radius 57.4 ft.

The average shear strength at unit safety factor equals:—

$$494 \text{ lb. per sq. ft.}$$

The satisfactory determination of the shear strength of the curved layer is very difficult, but it can be safely assumed that at some stage it reached this value and failure resulted. It was assumed that this value could fall to 350 lb./ft.<sup>2</sup> and if this happened the force to be provided by the remedial works was 5 tons/ft. run at the sand level.

In repairing both slips the same principle was applied. It is proposed to

anticipate in the calculations given previously.

The buttresses were made by digging holes 12 ft. by 7 ft. in plan, in a pattern as shown in Fig. 7 to allow for easy working without the fear of weakening the cutting too much. They were carried through the sand layer and into the silty clay stratum as shown. This work was carried out while the slip was in progress, and heavy timbering was used, a necessary precaution as was shown by the considerable movement that took place. Compressed air clay spades and Neals cranes were the only power equipment used, and work progressed without difficulty until the sand layer was reached and pumping had to be started. At this stage, trouble was caused when the pumps, carrying a quantity of sand away with the water, caused large holes to be formed in the sand layer around the excavation.

All these forces can be considered in terms of their moment about the centre of the slip circle. They have all been calculated for a strip a foot wide and the results are shown below:—

(1) The out-of-balance moment  $M_B$  calculated using unit weight of clay as 136 lb./cu. ft.

$$M_B = 4,973,000 \text{ lb.ft.}$$

(2) The passive resistance of the clay

\* Part 1 appeared in our issue of May 22



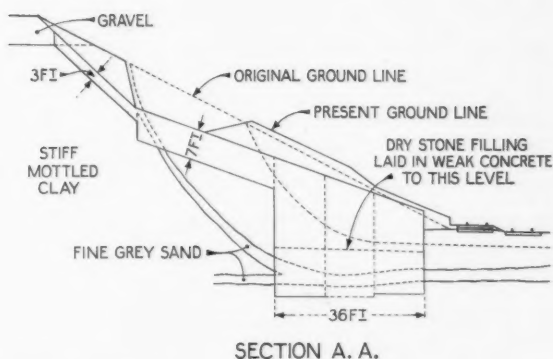
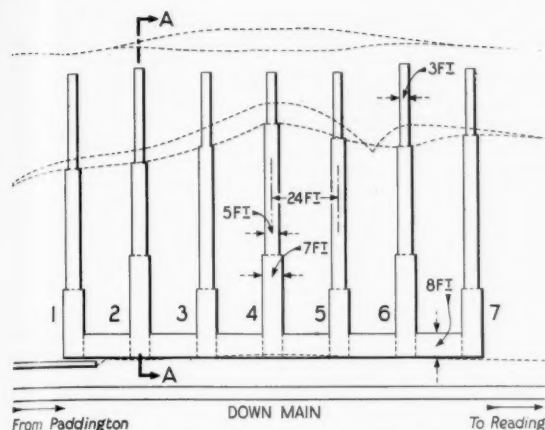


Fig. 7—Diagram of slip repairs at Sonning

The timbering was carried successfully through into the silty clay layer, however, and the flow of sand largely cut off. These holes were filled in when the stone backfill was placed. The stone backfill was laid in a matrix of 1:12 concrete except in the first two holes to be completed. No concrete was used in these and a 12-in. dia. earthenware pipe, was placed vertically in the middle of them was used as a sump from which the general water level could be kept to a minimum, thereby increasing the strength of the sand layer. In addition, 1½ in. gas pipes were placed so that grouting of the stone could be carried out at a later date.

It will be seen from Fig. 7 that successive 12 ft. by 7 ft. holes were constructed, one behind the other, to form the buttresses; the maximum and

minimum depths of excavation were 39 ft. and 21 ft. After the first of these had been constructed, a noticeable decrease in movement of the track was apparent. However, the cutting slope began to belly out.

To facilitate the construction of the second series of 12 ft. by 7 ft. holes, the timbering on the high side of the first series had been left in place. When these were again exposed by the excavation it was found that they had moved from a vertical position to such an extent that over a length of 26 ft. they were 2 ft. 10 in. out of true. These developments, which were welcomed in view of the minimising of the threat to the running lines, illustrated that a secondary slip was occurring above the level of the tracks. This was anticipated by the calculations, which showed

that the most likely type of failure to which the buttresses were subject was overturning.

To transfer the thrust from the slipping mass on to the buttresses, counterforts 7 ft. deep will be constructed running up the bank. These also act as drains. The water which collects in the gravel stratum will be tapped by shallow drains connected to the counterforts. It is intended in this way to prevent surface water running into the exposed top of the sand layer; in addition this will be covered with clay and punned down.

This will be reinstated where the old earthenware pipes have been broken up by the slip. The water will be collected at the level of the top of the grouted part of the buttresses and then run into the centre cess drain at about 6 ft. 6 in. below rail level. The new slope will be compounded, 1:3 over the slipping area and 1:1½ over the unaffected part. This in itself reduces the out of balance force by 23 per cent and will add to the stability of the completed work.

#### Calculations of Factor of Safety

Out of balance moment = 3,819,000 lb. ft. This is to be counter-balanced by the strength of the sand layer (350 lb. per sq. ft.) = 1,500,000 lb. ft. The passive earth pressure is assumed to act in reducing the out of balance moment between the counterforts only. The pressure on the front of the buttress is used in considering their stability.

Stabilising moment of passive earth pressure =  $\left(\frac{24-7}{24}\right) \times 2,820,000 = 2,000,000$  lb. ft. ∴ Unbalanced moment to be withstood by the buttresses equals 319,000 lb. ft.

The criterion for deciding the safety factor is the overturning of the concreted portion of the buttress. The forces acting are shown in Fig. 8. The calculation is carried out for the smaller of the two types of buttress which is 24 ft. by 7 ft. in plan. The whole unbalanced moment is assumed to act through the counterforts and resolves into the force  $F_H$  and a

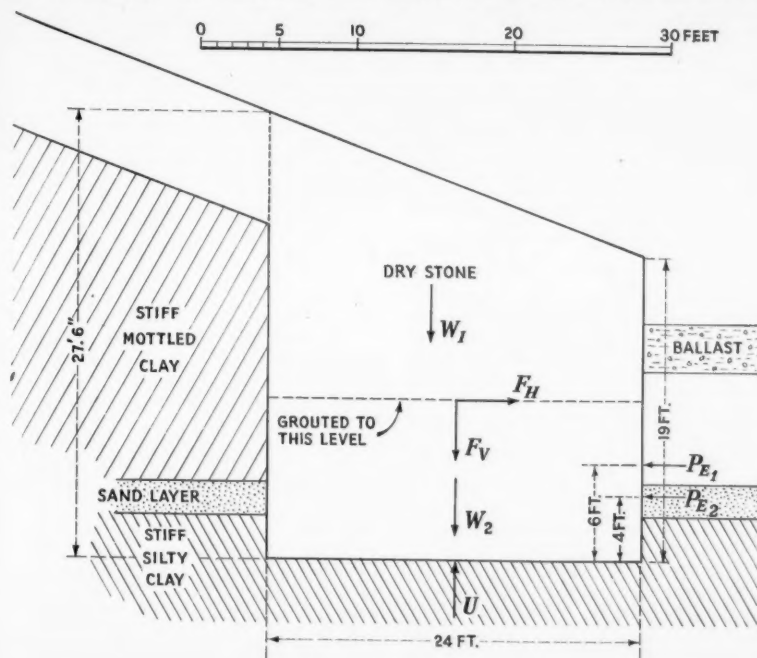


Fig. 8—Diagram of forces acting on the concreted portion of the buttress

force  $F_v$  which, acting through the centre of the slip circle, has no moment.  $F_H$  acts at a perpendicular distance of 51 ft. from the centre of the slip circle.

$$F_H = \frac{319,000}{51 \times 2,240} \times 24 = 67 \text{ tons.}$$

$F_v$ . Resolving  $F_H$  with  $F_v$  and assuming the angle of shearing resistance of the drystone to be 60 deg. then

$$F_v = F_H \tan \left( \frac{2}{3} \times 60 \text{ deg.} \right) = 56 \text{ tons.}$$

$W_1$  is the weight of the drystone = 119 tons.

$W_2$  is the weight of the concreted part of the buttress = 105 tons.

$U$  Upthrust on the buttress due to the water surrounding it = 47 tons.

emergency measure to apply was the construction of buttresses. The job could begin without plant; timber and hand tools and labour skilled in this type of work were readily available. In the first instance, the construction of buttresses was the obvious course, and two holes were started on March 10. At the same time calculations of efficiency in terms of safety factor for assumed conditions and estimates of cost were made.

#### Reinforced Concrete Wall

One scheme involved the construction of a reinforced concrete retaining wall founded in the stable stratum below the sand layer and extending the length of the slipping area. The thrust would be transferred from the clay mass to the

the buttresses, the perforations being at the level of the sand lens. The pipes terminated slightly above the level of the drain in the centre cess, that is 12 ft. above the sand lens. The buttresses are then to be connected by earthenware pipes to the centre cess drain. The hydrostatic head is limited by these measures to 12 ft.

A slip plane having formed, and the effective strength of the clay being greatly reduced, it was necessary also to provide another stabilising factor which also took the form of buttresses and counterforts. As the original slope was not so great as at Sonning the remedial measures were not so extensive. The buttresses measured 24 ft. by 7 ft. and were spaced at 21 ft. centres, and the



*Twyford slip, Cutting after completion of remedial work*

$P_{E1}$  and  $P_{E2}$ . The presence of the sand layer is ignored in calculating these values and they can be found in the same way as before.

$$P_{E1} = 1,890 \text{ lb.} = 0.84 \text{ tons.}$$

$$P_{E2} = 244,300 \text{ lb.} = 105 \text{ tons.}$$

Using the forces given above and the dimensions shown, Fig 8, it is possible to take moments about the toe or heel of the buttress. From this the reaction on the base can be found and hence the greatest stress on the base is 1.4 tons per sq. ft. The ultimate bearing stress by experiment = 3.5 tons per sq. ft. Thus the factor of safety for the smaller type buttress equals 2.5. The factor of safety for the larger type of buttress can be calculated in the same way and equals 3.1. Thus the overall safety factor lies somewhere between these values, and these are considered to be satisfactory limits.

When remedial measures were first called for, the overriding factor to be considered was which method would have the quickest effect in arresting the movement of the main line. The easiest

wall and thence to the stable stratum. The cost for a similar factor of safety was about the same; this solution was not used because the skilled labour required for reinforced concrete construction was not readily available.

#### Compounding of Slope

Secondly, a satisfactory factor of safety could be obtained by compounding the existing slope of 1:2 to be 1:4 over the slip and 1:1½ above it. This would have the effect of moving the edge of the slope back a maximum of 8 ft. which would still not involve any movement of the boundary fence. This scheme envisaged the use of a mechanical excavator operating from the stable portion above the slope. This idea was regretfully abandoned (it involved a saving in cost of about 50 per cent) as it was felt that traffic might be endangered.

The prime cause of the slip at Twyford was the hydrostatic head which had collected in the sand lens. This was reduced to an economic minimum by the use of 6-in. dia. cast-iron pipes, with perforated ends, which were built into

counterforts will be made to drain the gravel layer directly. The buttresses were constructed in dry stone with no concrete matrix.

This article shows how a new cutting may be threatened by the existence of permeable strata which are below the limit of excavation. If a preliminary investigation has been carried out and the presence of a permeable stratum found, the correct slope of the new cutting can be found using the calculation methods used in this article.

The author is indebted to Mr. M. G. R. Smith, Civil Engineer, Western Region, for permission to publish this report; Mr. P. Protopapadakis, Development Assistant, for his advice and guidance; and Mr. D. L. Bartlett.

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(Concluded)

## RAILWAY NEWS SECTION

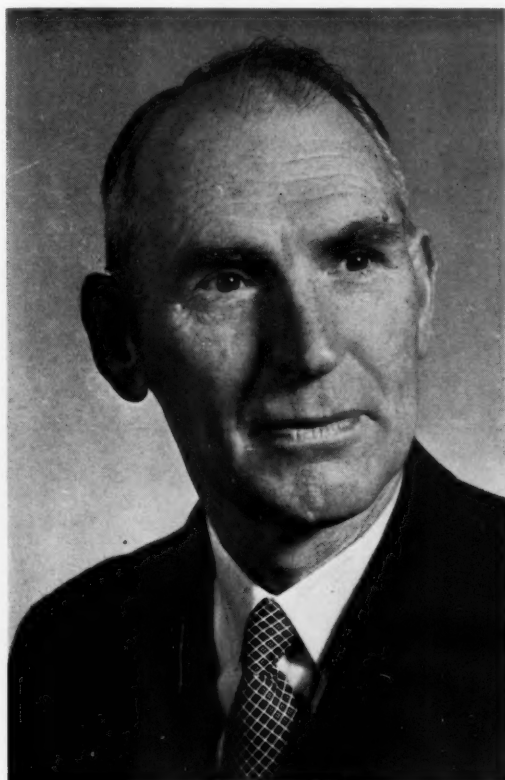
## PERSONAL

Mr. A. Malcolm, Assistant Accountant, Coras Iompair Eireann, has been appointed Chief Accountant of the same system.

Mr. W. G. W. Reid, Railway Adviser to the High Commissioner, India, is relinquishing this position on June 1. He will be succeeded by Mr. R. G. da Costa.

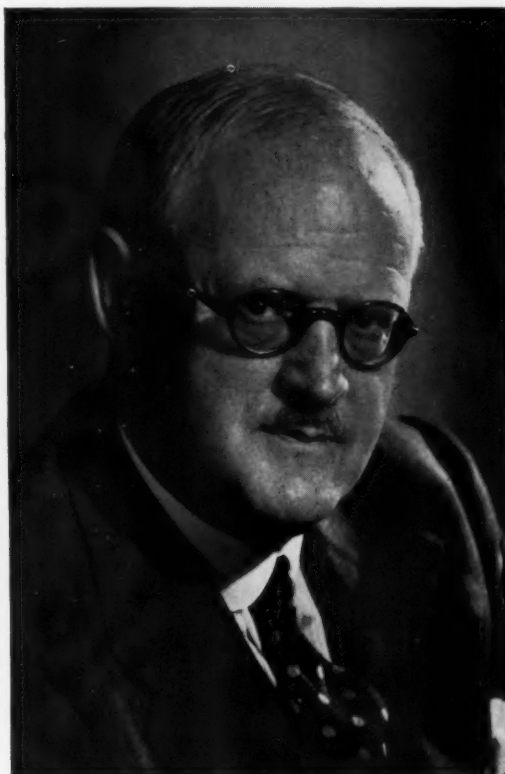
For some years Mr. Hodges was examiner for the tariff section in the Department's staff examinations, and was also a member of the Suggestions & Inventions Committee. He represented the Railways Department on the Waterside National Disputes Committee from 1940 until it was disbanded, and also represented the Department on recent port investigations in the North Island.

by the Board from the municipal and company tramway undertakings, and carried out negotiations with the highway authorities concerned in the scheme for the abandonment of tram tracks in North London. In 1939, Mr. Croom-Johnson was appointed Chief Stores Superintendent, and, in 1943, he became Chief Engineer (Civil). In 1945 he took over responsibility for the electrical engineering



*Mr. W. E. Hodges*

Chairman, Railways Management Committee,  
New Zealand



*Mr. P. Croom-Johnson*

Chief Engineer, London Transport Executive,  
1945-53

Mr. W. E. Hodges, Commercial Manager, New Zealand Railways, who, as recorded in our January 23 issue, has been appointed Chairman of the newly-formed New Zealand Government Railways Management Commission, is the eldest son of an enginedriver who was also the eldest son of an enginedriver. Mr. Hodges was born in Masterton in 1902 and was educated at the Wanganui Technical College. He joined the New Zealand Railways in 1917 as a cadet in the telegraph office at Wellington. After wide experience at various North Island stations and in the District Traffic Manager's Office at Wellington, he was transferred to the Commercial Branch in 1934. He occupied positions in every section of that branch and was appointed Assistant Commercial Manager in 1948. Two years later he was appointed Commercial Manager, and in that position was responsible for many major reforms which benefited the business community, including the introduction of many tariff simplification measures.

Mr. P. Croom-Johnson, C.B.E., M.I.C.E., Chief Engineer, London Transport Executive, is retiring on June 20 after more than forty years in the engineering profession. After the first world war, in which he held a commission in the Royal Artillery and served on the Belgian and Italian fronts, he returned to Liverpool, where he was engaged upon highway and tramway construction and maintenance, and the development of rapid-transit roads, including the Liverpool-Manchester arterial road. Subsequently, he joined a firm of public works contractors in London, but resigned to take up the appointment of Chief Resident Engineer with the Ministry of Transport. Mr. Croom-Johnson joined London County Council Tramways in 1924 as Assistant Permanent Way Engineer. A year later, he was appointed Permanent Way Engineer. On the formation of the London Passenger Transport Board in 1933 he assumed additional responsibility for the tracks and buildings taken over

department, and was appointed Chief Engineer. Mr. Croom-Johnson was awarded the C.B.E. in the 1948 Birthday Honours.

Mr. H. P. Hira, General Manager, Central Railway, India, has proceeded on leave from May 21.

Mr. A. Saldanha, Senior Deputy General Manager, has been appointed to officiate as General Manager during Mr. Hira's absence.

We regret to record the death in Cape Town, S. Africa, at the age of 80, of Sir Richard Goode, who was Railway Commissioner for Northern Rhodesia, 1927-36.

We regret to record the death on May 22, at the age of 71, of Sir William George Hynard, Director of Sea Transport, 1929-39, and Assistant Director-General, Ministry of Transport, 1942. The cremation will take place today (Friday) at noon at Marylebone.

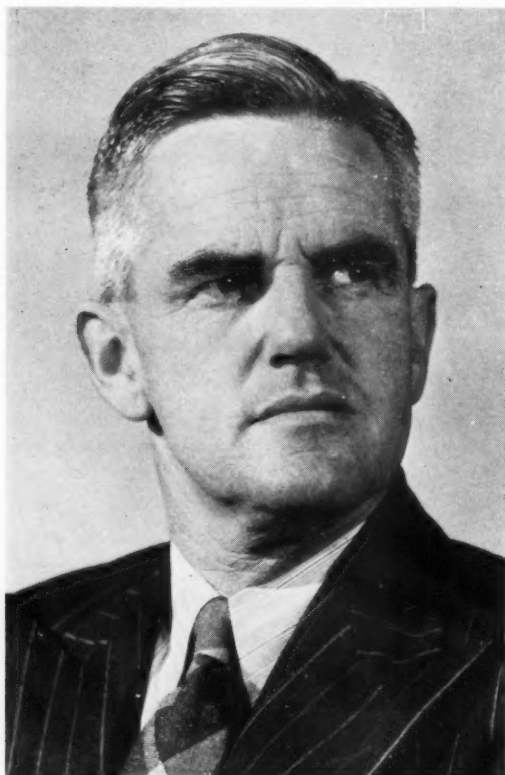


Mr. A. T. Gandell, Investigating Engineer, New Zealand Railways, who, as recorded in our January 23 issue, has been appointed a Director of the newly-formed New Zealand Government Railways Management Commission, was born at Greymouth in 1904 and educated at the Greymouth District High School. Mr. Gandell entered the service of the Railways Department in 1920 as a civil engineering cadet. He began duty on construction works associated with the Otira Tunnel project and later filled railway engineering appointments in various parts

of the country. His previous employment Commission, comes from a family that had long association with the New Zealand Railways. Born in 1901 at Onehunga, near Auckland, he entered the railways in 1917 as a cadet at Wellington, and later served as a clerk at various country stations in the North Island. In 1931 he was transferred to the District Traffic Manager's office at Auckland, where he remained until his promotion to Stationmaster, Pokeno, in 1938. Shortly before the end of the war he became Assistant Traffic Inspector at Auckland, and two years later entered the

Weavers' Union; Mr. J. Shaw, Chairman, Allied Ironfounders Limited; Mr. C. Connell, President of the Shipbuilding Conference; Sir Percy Lister, Chairman, R. A. Lister & Co. Ltd.; Mr. G. Beharrell, Managing Director, Dunlop Rubber Co. Ltd., and Past President of the Society of Motor Manufacturers and Traders.

Sir Lincoln Evans, who is General Secretary of the Iron & Steel Trades Confederation, is to resign from that office, and Mr. R. Shone is to terminate his directorship of the Iron & Steel Federation.



Mr. A. T. Gandell

Director, New Zealand Government Railways Management Commission



Mr. C. H. Bray

Director, New Zealand Government Railways Management Commission

of New Zealand. Mr. Gandell assisted in the Halcrow-Thomas inquiry of 1949, which made recommendations for the modernisation and electrification of the Auckland suburban railway system. Last year he was appointed by the Minister of Railways to a committee set up in Auckland to consider means of co-ordinating city transport facilities with the modernised railway system. It was last year, too, that he was appointed Investigating Engineer and was seconded from the civil engineering branch to the General Manager's Administrative Division at Wellington. Mr. Gandell is an associate member of both the Institution of Civil Engineers and the New Zealand Institution of Engineers.

Mr. C. H. Bray, who was recently for a short period Transportation Superintendent, New Zealand Railways, and, as recorded in our January 23 issue, has been appointed a Director on the newly-formed New Zealand Government Railways Man-

agement Commission, comes from a family that had long association with the New Zealand Railways. Born in 1901 at Onehunga, near Auckland, he entered the railways in 1917 as a cadet at Wellington, and later served as a clerk at various country stations in the North Island. In 1931 he was transferred to the District Traffic Manager's office at Auckland, where he remained until his promotion to Stationmaster, Pokeno, in 1938. Shortly before the end of the war he became Assistant Traffic Inspector at Auckland, and two years later entered the

The following appointments to the newly-formed Iron & Steel Board have been announced:—

*Chairman:* Sir Archibald Forbes.

*Vice-Chairman:* Sir Lincoln Evans.

*Full-Time Member:* Mr. R. Shone.

*Part-Time Members:* Sir Andrew McCance, Joint Managing Director of Colvilles Limited; Mr. N. Rolleson, Managing Director, John Summers & Sons Limited; Mr. J. Owen, General Secretary, National Union of Blastfurnacemen and Member of the General Council of the Trades Union Congress; Mr. A. Naesmith, General Secretary, Amalgamated

The following appointments to the Road Haulage Disposal Board, which is being set up under the Transport Act, 1953, have been made:—

*Chairman:* Sir Malcolm Trustram Eve, Bt., G.B.E., M.C., T.D., Q.C., Independent Chairman of the Cement Makers' Federation.

*Deputy Chairman:* Mr. F. J. Orchin, C.B., O.B.E., until 1950 Chief Financial Officer, Road Haulage Executive.

*Members:* Lord Rusholme, nominated by the British Transport Commission, Member, British Transport Commission. Mr. W. Gordon Graham, representing trade and industry, formerly Managing Director of Morris Commercial Cars Limited. Mr. F. H. Farmer, representing holders of "A" or "B" carriers' licences Member, National Council of the Road Haulage Association, and Managing Director of Atlas Express Co. Ltd. Mr. J. W. Greenwood, representing holders of "C" carriers' licences, formerly Transport Manager of Messrs. Thomas Firth & John

Brown Limited, and Chairman of the Sheffield Division of the Traders' Road Transport Association.

The Chairman and members will serve on a part-time basis and the Deputy Chairman on a full-time basis.

Lord Bilsland, the President and Chairman of the Executive Committee, Scottish Council (Development and Industry), has agreed to make himself available for consultation on all questions involving Scottish interests.

The following are office holders of the Institute of Traffic Administration for the coming year:—

#### London Centre

Chairman:—Lt.-Colonel A. C. Ping. Immediate Past Chairman:—Mr. W. F. Hill. Deputy Chairman:—Mr. R. J. Sparrow. Vice-Chairmen:—Messrs. W. Hodgson and H. B. Coates. National Council Representative:—Mr. W. F. Hill. Hon. Secretary:—Mr. R. W. Tree. Hon. Treasurer:—Mr. D. Hicks. Press Officer:—Mr. W. F. Spurling. Committee:—Messrs. L. J. Cox, A. T. Hills, W. S. Hill, T. J. D. Morris, D. H. Newton. Mrs. Christine Taylor, and Major C. H. Wybrow.

#### Birmingham Centre

Chairman:—Mr. R. H. Addelee. Vice-Chairman:—Mr. J. Foley Egginton. Hon. Secretary:—Mr. J. S. Burdon. Hon. Treasurer:—Mr. F. R. Moore. National Council Representative:—Mr. W. H. Bennett. Press Officer:—Mr. P. L. Hardy. Assistant Secretary:—Mr. B. Walmsley. Committee:—Messrs. H. G. Bowkley, C. Collins, J. S. R. Cotterell, K. J. P. Bowyer, D. M. Kirby and D. A. Phelps.

#### South Western Centre

Chairman:—Mr. S. H. Bazley. Vice-Chairman:—Mr. F. A. Noble. Hon. Secretary/Treasurer:—Mr. C. Nurse.

#### Glasgow Centre

Chairman:—Mr. J. H. Young. Vice-Chairman:—Mr. A. Hubert. Hon. Secretary/Treasurer:—Mr. G. Hill. Minute Secretary:—Mr. H. Corrance. National Council Representative:—Mr. G. Hill. Chairman:—Mr. E. G. Dale. Hon. Secretary:—Mr. G. Birks.

The Board of Trade announces that Sir Arnold Plant has been appointed a part-time member of the Monopolies & Restrictive Practices Commission. The appointment is for four years.

Mr. Stanley Dudman has retired as Chairman of the Public Transport Association. Mr. E. L. Taylor has been elected to succeed him, and Mr. Stanley Dudman and Mr. J. W. Womar have been elected Vice-Chairmen for the ensuing year.

Mr. L. Pemberton has been appointed Chief Technical Representative, Sanders & Forster Limited. Mr. Pemberton was previously Manager of the Steelwork Division of Chamberlain Industries Limited, Leyton.

Mr. W. B. Carter, District Commercial Superintendent, British Railways, London Midland Region will control the newly-merged Nottingham and Derby Commercial Superintendent's offices (see news article on another page).

We regret to record the death on May 21, at the age of 82, of Mr. J. H. Matthews, formerly Chief of Police of the Great Western Railway, who retired on January 4, 1936, after 49 years' service. The funeral service took place on May 27 at St. Lawrence, Upton, Slough, followed by cremation.

Mr. E. F. Wright has joined the Board of Wagon Finance Corporation.

Mr. H. L. Purdy has been appointed Vice-President of British Columbia Electric Railway Company.

Leyland Motors Limited has appointed Mr. Charles Keller, Theaterstrasse 10, Zürich, to be its agent in Switzerland.

Sir William Stanier, F.R.S., has accepted an invitation to join the Board of Brynmawr Rubber Limited.

Mr. J. J. Leenane has been appointed Assistant Passenger-Agent, and Mr. W. G. Wakely, Assistant Freight Agent, for British Railways in Ireland.

Mr. F. Batty, Freight Trains Assistant to the Operating Superintendent, Scottish Region, British Railways, has been appointed District Operating Superintendent, Burntisland.

Mr. Francis W. Case, Audit Assistant to Accountant, Southern Region, British Railways, is relinquishing his seat on the Board of the Channel Tunnel Company. He will be succeeded by Mr. F. R. Stockdill, Accountant, Southern Region, British Railways.

Mr. Alonzo Limb, Managing Director, C. C. Wakefield & Co. Ltd., has been elected to the additional post of Deputy Chairman. Mr. L. W. Farrow, C.B.E., is the company's Chairman.

Mr. W. S. Warner, Secretary, and Mr. G. W. Richards, Forging Department Manager, High Duty Alloys, have been appointed to the Board of the company, which is a member of the Hawker Siddely group.

Mr. Michael Clear, B.Sc., M.I.Mech.E., Managing Director of Brush Aboe (Southern Africa) Limited, has been appointed Group Sales Director of the Brush Group of companies, and a member of the Board of Associated British Oil Engines Limited.

Lord Baillieu, Chairman, Dunlop Rubber Co. Ltd., has been elected an honorary member of the Institution of Mining & Metallurgy in recognition of his services to the mining and metallurgical industries and of his work as Chairman of the Empire Council of Mining & Metallurgical Institutions.

The following announcement has been made by Laycock Engineering Limited:—

Mr. W. E. Thompson, Secretary, has been appointed a Director with particular reference to commercial and financial matters. He will retain the Secretaryship of the company.

Mr. Kenneth Walker, Assistant Production Engineer, has been appointed Works Director.

Metropolitan-Vickers Electrical Export Co. Ltd. announces the following appointments, which took place from April 1, 1953.

Mr. F. C. Halawell is appointed Manager for Brazil in succession to Mr. H. W. Foy, who continues in an advisory capacity.

Mr. E. E. Sarasa is appointed Manager for Argentina.

Mr. R. Morris is appointed Technical Representative in Colombia, Peru and Venezuela; for the present he will be located with the M-V agent in Bogota, Colombia.

#### Institution of Mechanical Engineers

The following is a selection of names from a list of recent elections to the Institution of Mechanical Engineers:—

Hon. Member:—Capt. W. Gregson, R.N.R., Babcock & Wilcox Limited.

Members:—Mr. Jean Louis, Ste. Fse. des Constructions Babcock & Wilcox, France; Brigadier S. A. Westrop, John Mowlem & Co. Ltd.

Associate Members:—Mr. A. Murray, Production Engineering S.A. Pty Ltd., S. Africa; Mr. H. Roberts, the Goodyear Tyre & Rubber Co. (G.B.) Ltd.; Mr. K. L. Stretch, I.C.I. Limited; Mr. F. R. Wemyss, Shell Company of Singapore Limited, Malaya.

#### Argentine Winter Services

Winter services are now in force on all Argentine railways except the General Belgrano where no change has been made. The principle followed this time is the maintenance of previous timetables with the suppression of seasonal trains and the addition of some new trains composed of recently received Dutch-built rolling stock.

On the D.F. Sarmiento Railway the night train from Eva Perón to Toay runs four times a week and the new day train "El Puelche" twice a week. To Colonia Alvear there is the night train "El Condor" three times a week and the new day train "El Ranquelino" once weekly. The night trains "El Colonizador" and "El Justicialista" each run three times weekly, the first to Alpachiri, Cereales and Doblas and the second to Telén and Arizona. On the General San Martín Railway the international train "El Libertador" runs twice weekly to Chile. To Mendoza and San Juan there are the night train "El Zonda" and the day express "El Cuyano," the first twice and the second three times weekly, as well as a diesel train twice weekly. The night train "El Sierras Grandes" runs once a week, while the service to San Rafael is maintained by a weekend express and the sleeping car train "El Nihuil" twice weekly. There is also a weekend diesel express to Villa Dolores and a diesel train between Mendoza and Rosario (Mitre Railway) twice weekly.

The only changes on the General Mitre Railway are in the Córdoba services, which in the winter months will be as follows: The night express "Rayo de Sol" five times a week, the day express "El Serano" twice a week, and the night train "El Turista" once weekly. The stopping train from Rosario to Córdoba will run five times a week. On the General Urquiza Railway the international train "El Guarani" runs once weekly to Asunción (Paraguay) and also once weekly to Posadas. Posadas is also served by "El Gran Capitán" once weekly and by the Sargento Cabral express twice weekly. This latter train also serves Corrientes, to which "El Correntino" runs additionally three times a week. "El Entrerriano" runs to Concordia three times a week as does the one class day train "El Popular" to Villaguay.

Mar del Plata is served by a General Roca Railway express twice weekly, a weekend express and a daily stopping train. Necochea has three day trains and one night train a week as well as a weekend express. The service to Bariloche is maintained by the weekly "Lagos del Sur" express of this system and three stopping trains per week. To Zapala are four stopping trains and two expresses, and the Bahía Blanca line has six night trains, three semi-fast trains and a day express via Pringles and three day and one night train via General Lamadrid.

# British Transport Commission Statistics. (Period No. 3)

Summary of the principal statistics for the four-week period ending March 22

## STAFF

| —          | B.T.C.<br>Head<br>Office | British<br>Railways | London<br>Transport | British<br>Road<br>Services | Road<br>Passenger<br>(Provincial) | Hotels &<br>Catering | Ships &<br>Marine | Inland<br>Waterways | Docks,<br>Harbours,<br>Wharves | Railway<br>Clearing<br>House | Commer-<br>cial Adver-<br>tisement | Legal | Films | Total   |
|------------|--------------------------|---------------------|---------------------|-----------------------------|-----------------------------------|----------------------|-------------------|---------------------|--------------------------------|------------------------------|------------------------------------|-------|-------|---------|
| Number ... | 285                      | 601,111             | 96,552              | 70,376                      | 60,758                            | 15,347               | 6,071             | 4,743               | 20,821                         | 549                          | 200                                | 323   | 43    | 877,179 |

## BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

| —                                     | Four weeks to<br>March 22 |              | Aggregate for<br>12 weeks |              |
|---------------------------------------|---------------------------|--------------|---------------------------|--------------|
|                                       | 1953<br>£000              | 1952<br>£000 | 1953<br>£000              | 1952<br>£000 |
| British Railways—                     |                           |              |                           |              |
| Passengers ... ..                     | 7,058                     | 6,854        | 19,975                    | 19,232       |
| Parcels, etc., by passenger train ... | 2,900                     | 2,725        | 8,272                     | 7,842        |
| Merchandise ... ..                    | 8,823                     | 8,771        | 25,346                    | 25,242       |
| Minerals ... ..                       | 3,679                     | 3,327        | 10,725                    | 9,901        |
| Coal & coke ... ..                    | 9,121                     | 8,373        | 26,545                    | 24,599       |
| Livestock ... ..                      | 168                       | 129          | 454                       | 340          |
| Total British Railways ... ..         | 31,749                    | 30,179       | 91,317                    | 87,156       |
| British Railways, C. & D., etc. ...   | 925                       | 922          | 2,653                     | 2,661        |
| British Road Services ... ..          | 6,230                     | 6,267        | 17,900                    | 18,007       |
| Provincial & Scottish Buses ... ..    | 3,265                     | 3,103        | 9,550                     | 8,877        |
| London Transport—                     |                           |              |                           |              |
| Railways ... ..                       | 1,390                     | 1,398        | 4,125                     | 3,844        |
| Buses & coaches ... ..                | 3,006                     | 2,888        | 8,632                     | 7,919        |
| Trolleybuses & trams ... ..           | 697                       | 756          | 2,027                     | 2,081        |
| Total London Transport ... ..         | 5,093                     | 5,042        | 14,784                    | 13,844       |
| Ships ... ..                          | 578                       | 610          | 1,709                     | 1,767        |
| Inland Waterways : Carrying ... ..    | 71                        | 71           | 209                       | 207          |
| Total Passengers ... ..               | 15,584                    | 15,176       | 44,848                    | 42,478       |
| Total Freight, Parcels & Mails ...    | 32,327                    | 31,018       | 93,274                    | 90,041       |
| Inland Waterways : Tolls, etc. ...    | 107                       | 107          | 321                       | 317          |
| Docks, Harbours, etc. ... ..          | 1,223                     | 1,157        | 3,541                     | 3,547        |
| Hotels & Catering—                    |                           |              |                           |              |
| Hotels ... ..                         | 415                       | 431          | 1,198                     | 1,248        |
| Restaurant cars ... ..                | 191                       | 195          | 571                       | 577          |
| Refreshment rooms ... ..              | 553                       | 500          | 1,643                     | 1,514        |
| Total Hotels and Catering ... ..      | 1,159                     | 1,126        | 3,412                     | 3,339        |
| TOTAL ... ..                          | 50,400                    | 48,584       | 145,396                   | 139,722      |

## LONDON TRANSPORT

| —                           | Passenger<br>journeys | Inc. or dec.<br>per cent<br>over 1952 | Car<br>miles  | Inc. or dec.<br>per cent<br>over 1952 |
|-----------------------------|-----------------------|---------------------------------------|---------------|---------------------------------------|
| Railways ... ..             | 000<br>45,461         | -2.2                                  | 000<br>16,420 | -4.5                                  |
| Buses & coaches ... ..      | 223,839               | +2.1                                  | 26,875        | +1.4                                  |
| Trolleybuses & trams ... .. | 57,967                | -8.2                                  | 5,733         | -12.2                                 |
| Total ... ..                | 327,267               | -0.5                                  | 49,028        | -2.4                                  |

## INLAND WATERWAYS

### Tonnage of traffic and ton miles

| —                                  | Tonnage    | Inc. or dec.<br>per cent<br>over 1952 | Ton<br>miles | Inc. or dec.<br>per cent<br>over 1952 |
|------------------------------------|------------|---------------------------------------|--------------|---------------------------------------|
| Coal, coke, patent fuel & peat ... | 000<br>546 | +7.4                                  | 000<br>8,093 | +8.4                                  |
| Liquids in bulk ... ..             | 152        | -13.6                                 | 3,797        | -11.8                                 |
| General merchandise ... ..         | 293        | -19.7                                 | 5,153        | -4.0                                  |
| Total ... ..                       | 991        | -5.5                                  | 17,043       | -0.6                                  |

## BRITISH RAILWAYS

### Rolling Stock Position

| —                        | Operating<br>stock | Number<br>under<br>repair | Available<br>operating<br>stock | Available<br>operating<br>stock<br>in 1952 |
|--------------------------|--------------------|---------------------------|---------------------------------|--|
| Locomotives ... ..       | 18,593             | 3,212                     | 15,381                          | 15,555                                     |
| Coaching vehicles ... .. | 57,478             | 5,711                     | 51,767                          | 52,269                                     |
| Freight wagons ... ..    | 1,120,704          | 77,811                    | 1,042,893                       | 1,051,002                                  |

## BRITISH RAILWAYS

### Passenger Journeys (Month of February, 1953)

| Full<br>fares | Excursions,<br>cheap day, etc. | Other<br>descriptions | Early morning<br>and workmen | Season<br>tickets | Total      | Inc. or dec.<br>per cent<br>over 1952 |
|---------------|--------------------------------|-----------------------|------------------------------|-------------------|------------|---------------------------------------|
| 14,093,000    | 14,904,000                     | 2,741,000             | 15,230,000                   | 16,674,000        | 63,642,000 | -9.9                                  |

## BRITISH RAILWAYS

### Freight Tonnage Originating and Estimated Ton-Miles (Period No. 3)

| —                       | Merchandise  | Minerals     | Coal & coke   | Livestock | Total         | Inc. or dec.<br>per cent<br>over 1952 |
|-------------------------|--------------|--------------|---------------|-----------|---------------|---------------------------------------|
| Tons originating ... .. | 000<br>3,964 | 000<br>5,141 | 000<br>14,488 | 000<br>54 | 000<br>23,647 | +2.6                                  |
| Ton-miles ... ..        | 568,639*     | 430,405      | 882,558       | —         | 1,881,602     | +0.5                                  |

\* Includes livestock

## BRITISH RAILWAYS (Period No. 3)

| —           | Total steam<br>coaching<br>train-miles | Total electric<br>coaching<br>train-miles | Total freight<br>train-miles | Freight train-<br>miles per train<br>engine-hour | Net ton-miles<br>per total<br>engine-hour | Locomotive coal consumption |                        |
|-------------|--|---|------------------------------|--|---|-----------------------------|------------------------|
|             |  |   |                              |  |   | Total tons                  | Lb. per<br>engine-mile |
| 1953 ... .. | 13,579,000                             | 3,714,000                                 | 11,464,000                   | 8.34   | 623                                       | 1,049,000                   | 63.7                   |
| 1952 ... .. | 13,369,000                             | 3,729,000                                 | 11,471,000                   | 8.45   | 620                                       | 1,049,000                   | 63.6                   |



## Canadian Pacific Railway Company

*Necessity of increasing railway capacity in step with Canadian industrial production*

The annual general meeting of the Canadian Pacific Railway Company was held in Montreal on May 6, Mr. George A. Walker, Chairman of the company, presiding.

Mr. W. A. Mather, the President, in moving the adoption of the report and accounts, said it was perhaps significant that the historic and happy ceremony of the Coronation should coincide with what by all standards appeared to be a golden age of commerce for Canada. The dynamic growth of Canadian enterprise in the years since 1945 would, of course, not have taken place but for the confidence of the many investors whose savings had provided the capital necessary to put to practical use their extensive natural resources. The fact that in each of the last eight years savings invested in new productive facilities had exceeded the preceding year was a clear manifestation of public confidence in the ability of private enterprise to develop the rich natural resources of the country. The capital investment programme for the present year was impressive; an official estimate indicated outlays of the order of \$5.421 million or some 23 per cent. of the anticipated national output.

Their company's capital investment programme, designed to meet the need for transport facilities adequate to serve this growing productive capacity was an indication of their confidence in the future and of the extent to which they participated in giving new shape, depth, and perspective to the national economy.

As a result of development in various directions railway capacity in Canada had in large measure been used up. In fact many facilities were being severely taxed and an increase in capacity was required. In essence the problem now was for the railways to keep pace with Canada. The increase in freight traffic in recent years had indeed been striking. In 1952 the Canadian Pacific handled 29 billion revenue ton-miles of freight, a volume greater than ever before. This was an increase of 8 per cent over 1951, of 6 per cent over the war-time peak of 1944, and of 60 per cent over the inter-war peak of 1928. While the volume of traffic had increased the man-hours to handle it had decreased. In 1928 there was an average of three man-hours of labour per thousand gross ton-miles as compared with two hours in 1952, a decrease of one-third.

The number of cars and locomotives required had also decreased. The all-time peak load of traffic carried in 1952 was handled with 12,700 fewer cars and 360 fewer locomotives of greater capacity than were available for the much smaller volume of traffic in 1928.

Operating statistics emphasised many of the gains in efficiency that had been made. The tonnage per car-mile rose from 27.9 tons in 1928 to 33.2 tons in 1952. During the same period the average daily mileage made by all freight cars increased from 34.9 miles to 48.4 miles. Locomotive and train performance had shown quite marked improvement. Measured in gross ton-miles per freight train-hour, the work performed in 1952 was 50 per cent greater than in 1928. Not all of the progress showed up in statistical averages however. Improved services to shippers such, for example, as a scheduled trans-continental freight service providing fourth-morning delivery

from Toronto to Calgary and fifth-morning delivery from Toronto to Vancouver, which began on March 3 for this year, had been introduced.

### Freight Rates Problem

Dealing with freight rates, the President described the conditions which had shaped the rates structure for many years. Today the situation had changed completely. No longer were railways the exclusive means of transport for the high-value traffic upon which they relied to offset the marginal revenues derived from the haulage of primary commodities. The growth of other modes of transport had rendered high-value traffic vulnerable to competition. Highway lorries of course offered the major competition confronting the railways. The relative flexibility of operation and the initiative and enterprise of that industry had combined to develop new trade and traffic which in part might not otherwise have come into existence. Lorry competition had, however, become more intensive because, unlike railways, the industry was not required by law to carry all types of traffic at published scales of rates, enjoyed the privilege of using public highways at low cost and was relatively free from regulation.

The serious problem confronting the railways was that of meeting lorry and other competition while they themselves remained bound by a pattern of rates designed at a time when competition was a relatively unimportant factor. It was natural that those areas where development in the first instance was dependent upon those early transport policies governing the freight rate structure should be reluctant to see any change in the principles which then underlay such policies. Yet fears that such areas might be adversely affected by any change in the basic principles of the freight rate structure designed to make that structure serve better the future development of all of Canada were, he believed, ill-founded. Such changes would not only leave unimpaired the prosperity of the areas affected but would at the same time react to the benefit of the entire country.

The need for greater freedom in rate making was not felt in Canada only. In the United Kingdom recognition of this need had found expression in the repeal by Parliament of legislation which had hitherto deprived British railways of equality of opportunity to compete with highway transport. Important new principles aimed at bringing about greater flexibility in rate making had been adopted. In the United States, too, there was a growing awareness of the need of the railways for relief from outmoded regulations. Action to remedy the situation was being taken which it was expected would find expression in legislative proposals to be presented to Congress later in the year.

### Other Activities

There had been a year of record activity in Canadian oilfields. With the completion of additional transport and refinery facilities further substantial increases in production might be expected of the 200 million acres under exploration and development in Western Canada. Some 11 million acres were lands in which their company held title to petroleum rights. The income to

them from the development of these rights was in the form of reservation fees, rents, and royalties and amounted to \$3.6 million for the year 1952. This was an increase of \$1.4 million over the previous year, and present indications were that a similar increase might be expected in 1953.

With regard to British Columbia Coast steamships, the President said work had been begun on modern facilities on the site of the old Pier D at Vancouver. To augment the services between the mainland and Vancouver Island, tenders have been called for the construction of a self-propelled train ferry capable of carrying 800 passengers as well as 115 automobiles and lorries or 28 freight cars. This vessel would be placed in service between Vancouver and Nanaimo. Special new berthing facilities would be built at both ports for its efficient operation.

Prospects for their ocean steamships in 1953 were not too bright. While the Coronation ceremony had attracted good bookings for passenger traffic the volume of both trans-Atlantic and trans-Pacific freight traffic was expected to be low. In addition cargo rates were depressed because of a surplus of ships on world trade routes. The destruction by fire in January of the *Empress of Canada* while undergoing overhaul at Liverpool, was a severe loss to their passenger fleet. To replace this ship, the steam-turbine vessel *De Grasse* of 19,665 gross tons has been purchased from the French Line.

Completing their first decade of operations, their Air Lines in 1952 provided a greater volume of transport service than in any previous year. On routes extending over 25,000 miles 207,000 passengers were carried a total of 145 million miles. Cargo traffic amounted to 1.5 million ton miles and mail traffic to 1.2 billion pound miles.

Net earnings from railway operations for the first quarter had declined by \$630,000. This was attributable in part to a decline of 4.8 per cent in volume of traffic from the peak level of the first quarter of last year and in part to higher wage rates, which were not compensated for until March 16, when an increase in freight rates of 7 per cent became effective. While it was as yet too early to make an accurate prophecy for the year, studies by their traffic officers had not indicated a continuation of the decline in traffic and the results of their railway for the remaining quarters should show an improvement. On the other hand a reduction in other income seemed definitely indicated.

The report and accounts were adopted.

**B.E.T. OMNIBUS SERVICES LIMITED.**—The net profit of B.E.T. Omnibus Services Limited for the year ended March 31, 1953, of £382,065 represents an increase of £5,077. After adding £160,343 brought forward, and transferring £100,000 to general reserve, as last year, the available balance is £442,408. The directors recommend dividends of 10 per cent on the cumulative preference shares (on account of which 5 per cent was paid on December 1 last), less income tax; and 12 per cent free of tax on the ordinary shares (on account of which, also, 5 per cent was paid last December), leaving £197,033 to be carried forward.

## Railway Students' Association Convention

*Paper on international traffic, and visits to railway installations in Brussels*

The annual convention of the Railway Students' Association, London School of Economics & Political Science, this year was held in Brussels. The majority of members left London Victoria by the morning or afternoon service to Brussels, via Dover and Ostend, on Saturday, May 16, and returned by the same route on Wednesday, May 20.

Proceedings were opened by the President of the Association, Mr. C. P. Hopkins, Chief Regional Officer, Southern Region, British Railways, at the Hotel Splendid, Brussels, on the morning of Monday, May 18. He thanked particularly Mr. H. C. Talbot, Agent for British Railways in Belgium, who was present at the meeting, for the arrangements he had made and for his welcome.

Dr. F. Malfaisson, Assistant Principal Superintendent, Commercial Department, Belgian National Railways, then read a paper on "The Part Played by the Belgian National Railways in the International Traffic of Goods and Passengers." He first stressed the important geographical position of Belgium, at the centre of the great political, commercial, industrial, and maritime nations of Europe. Of all foreign traffic to, from and through Belgium, 25 per cent crossed the frontiers by rail. The railways also handled 25 per cent of the import and 45 per cent of the export traffic conveyed into and out of Belgium by sea or inland waterways. In 1952, 39 per cent of all goods traffic carried by the B.N.R. was either import, export or transit. International traffic comprised mainly solid fuel, iron ore, and metallurgical products; the port of Antwerp, with its 500 miles of standard-gauge track, was an important transfer point.

Later, at the invitation of M. De Vos, General Manager, Belgian National Railways, who was represented by M. Crem, Chief Operating Superintendent, members attended a luncheon at the Hotel Splendid. Among those present were:—

*Belgian National Railways:* MM. Crem; ellens, Stationmaster, Tour et Taxis Freight Depot; Herregat, Principal Superintendent, Traffic Department (Freight); Dr. Malfaisson; MM. Pierard, Principal Superintendent, Press Service; and Van Maele, Operating Department Officer.

*British Railways:* Messrs. C. P. Hopkins, Chief Regional Officer; R. E. Sinfield, Continental Superintendent, Southern Region; and H. C. Talbot, Agent in Belgium.

M. Crem welcomed the members to Brussels, and Mr. Hopkins, replying in French, said that the Association was indebted to the Belgian National Railways for the programme of the convention. Mr. S. E. Bellamy, Chairman of the Railway Students' Association, proposed a vote of thanks to the President for making the visit to Brussels possible, and also to Mr. A. F. Wallis, Honorary Organising Secretary, for his efforts.

On the afternoon of May 18, members visited the Brussels Junction Railway, two tracks of which have been in operation since last October. Of the remaining four, two are expected to be electrified and in use by October of this year, and the other two later in 1954.

The party first travelled between the new Nord and Midi Stations (on a higher level than the adjacent buildings they re-

placed), and then inspected the booking office and main signalbox at Midi, where all the main movements of through trains are being concentrated.

The electro-mechanical signalbox visited is the largest in Belgium and controls the south end of Midi Station. Some 170 of the 250 two-position route-setting levers are at present in use, and there is a reserve of 70 for selection. There are two large illuminated track diagrams in the box.

The last of the three intermediate stations on the Brussels Junction Railway, La Chapelle, had been opened on the morning of May 18, and like Congress is for suburban traffic only. Central is served by all the through main-line trains, however. At Central Station the history of the railway was described briefly and the party shown models of the new stations as they will be when completed. Members were then conducted over the station, and saw the magnificent main hall, with its modern booking office, train indicators, refreshment rooms, and special features such as the apparatus for an air "curtain" across the street doors to control temperature during the winter. They were also shown the Royal waiting room, and the special bay platforms which will accommodate a railcar connection to the

city airport at Melsbroeck; the Sabena building above, and opposite the main entrance to Central Station, is still under construction.

Beyond Schaerbeek, the important junction on the northern outskirts of Brussels, an extensive depot and marshalling yard stretches for a distance of three miles in the direction of Antwerp. The locomotive shed and hump control room were visited on the morning of May 19. Schaerbeek has been rebuilt after almost complete destruction during the war, and was described in our April 3 issue this year.

In the afternoon the party travelled in one of the multiple-unit trains on what was the first electrified line of the Belgian National Railways—to Antwerp—and there enjoyed a motorcoach tour of the city and docks. Before the convention closed, on May 20, members visited the Tour et Taxis Freight Depot in Brussels.

In the main goods office the method of consigning, invoicing and labelling was explained. There are 110 road vehicles attached to the depot; they collect some 6,000 consignments a day and about 2,500 are brought in by senders. Some transshipment traffic from small stations is dealt with in the large covered goods depot; electric battery trolleys and fork-lift trucks are used for handling the goods. The loading of a 5-ton wheeled container from a special road lorry on to a rail wagon (which carries three) was demonstrated in the outside yard, and the party finally visited the laboratory where packages are subjected to vigorous vulnerability tests.

## Brush Electrical Engineering Co. Ltd.

*Substantial volume of orders in hand*

The 64th annual general meeting of the Brush Electrical Engineering Co. Ltd. was held on May 21 in London, Sir Ronald W. Matthews, D.L., M.Inst.T., Chairman of the Company, presiding.

The following is an extract from the Chairman's circulated statement:—

It will be apparent to you from the directors' report and the accounts that 1952 has been a difficult year in certain directions. All branches of our business, however, have not been affected to an equal extent. We are not yet out of the wood, but as a result of the determined steps taken by the management during 1952 the closing months of that year were more successful and more profitable than the spring and summer.

### Sales

Having dealt at length with the widespread manufacturing activities, the statement referred to the recession in the export trade experienced during the middle of the year, and continued:—

Some of our more important markets, including India, Malaya, Australia and Brazil, drastically curtailed their orders and although strenuous efforts were made to sell elsewhere the setback was serious for some months and we have not yet fully recovered the ground lost. Notwithstanding the drop in order intake during 1952 the group as a whole still has a substantial volume of orders in hand and a number of encouraging orders both from home and abroad has been received.

The importance to the national economy of exports of capital equipment is well known; unless the heavily industrialised countries export their products to the

primary producing countries there can be no hope of raising and equalising the standard of life throughout the world. The Brush Aboe Group is exporting capital goods which have a life of many years and our customers would like to pay for them over a number of years. This is one of the services they are getting from our competitors in other countries, but we cannot pay our suppliers and our workpeople over a number of years; they want the food and clothing they have earned now. I feel most strongly that this question of extended credits can only be solved with Government assistance.

### Technical Development

The future development of the group continues to receive very close attention to ensure that the programme is based on the most modern scientific knowledge and is in harmony with the world economic trends. One of the world's foremost technologists in thermodynamics has been appointed our consultant on this subject.

Considerable study has been given to the technical development of our engine types, both in the improvement of existing engines and the study of new designs to meet the requirements of anticipated future markets. In the smaller ranges of engines considerable work has been done in extending the range of air-cooled engines for which there is an increasing demand, and air-cooled designs up to 100 b.h.p. have been developed and are being thoroughly tested before being put into full production. These are the largest air-cooled diesel engines produced in this country.

The report was adopted.

## Power Signalling Equipment

At a meeting of the Institution of Railway Signal Engineers held in London on February 18, with Mr. T. S. Lascelles, President, in the chair, a paper was read by Mr. L. J. M. Knotts on "Power Signalling Equipment—Design and Performance related to Installation and Maintenance." The paper referred to the advantages to be obtained from having a uniform system in this country; the limiting factors involved, and their influence on design; high cost of apparatus failure and the benefit to be derived from co-operation between manufacturer and user; maintenance procedure; and suggestions for design improvements. A film made by Mr. Knotts, with the assistance of Mr. C. C. B. Herbert, dealing with aspects of maintenance and installation on British Railways, was shown at the meeting.

Mr. E. G. Brentnall, opening the discussion, suggested that the "irreducible minimum" of faults should be zero, and that all faults should be investigated in detail. The information obtained would be useful in improving apparatus and the methods of its installation. Recently, on the London Midland Region, the whole question of servicing had been gone into in detail. As a result, it had been possible to extend the period of servicing for some apparatus. Referring to terminals being separate from the relay, he did not agree that greater accessibility would follow from placing terminals apart from the moving element, but pointed out that this practice called for more care in labelling. Referring to soldered joints, the general practice was not to have them, but in Germany it was a standard arrangement and they said they had no trouble with them.

Mr. J. H. Fraser said that one of the big mistakes made in early signalling was that the wearing parts of certain mechanical signal apparatus, in particular, were formed by the main frame of the apparatus itself, so that when one wanted to replace a worn part, one had to scrap the whole thing. Properly designed, every wearing part should be bushed to enable it to be taken out and replaced, leaving the main frame as good as ever. He suggested that one of the Regions should experiment with bearing materials of a fibrous nature, which probably would have a much longer life than had been experienced with metal bearings. He thought that plug-in apparatus was one of the biggest developments which had taken place in signalling in the last 20 years. Perhaps in 20 years' time everything would plug in, all connections would be soldered at the time the installation was put in, and after testing one would know that nothing had been altered.

Mr. R. A. Green, referring to the expression "installation and maintenance," expressed the view that, safety apart, maintenance considerations should take pride of place. There was a world of difference between installation and maintenance. The former took place in conditions more or less favourable from a traffic point of view, but maintenance had to be carried out with perhaps a heavy traffic movement, when seconds counted. Referring to soldered joints, if the suggestion was a wholesale changeover to them in signalboxes, he would need considerably more persuading, because the remarking of connections had to be done during the life of an installation, very often under traffic conditions, and he considered it hazardous to solder wires and tags in such circumstances.

Mr. T. Austin spoke on the question of a uniform system of reporting and analysing failures. The effort put into gathering

material would not be of much use unless experienced people were in charge of sorting it out. The designer and maintainer, if given this information in a summarised form, would find it of considerable benefit to them. He thought it fair to say that some of the disadvantageous designs were probably throw-backs to designing to price rather than to the best considerations of accessibility and ease of maintenance and installation, forced on the designers by bad competition.

A cordial vote of thanks was proposed by the President to Mr. Knotts and to Mr. Herbert for the trouble they had taken in the preparation of the paper and the film.

## Parliamentary Notes

### Road Haulage Disposal Board

Mr. Alan Lennox-Boyd, Minister of Transport, announced in the House of Commons on May 21, in reply to a question, that he had appointed the following to the Road Haulage Disposal Board:—

Chairman, Sir Malcolm Trustram Eve; Deputy Chairman, Mr. F. J. Orchin; Members, Lord Rusholme, Messrs. W. Gordon Graham, R. H. Farmer, J. W. Greenwood.

Lord Bilsland had agreed to make himself available for consultation on all questions involving Scottish interests.

The Chairman and members would serve on a part-time basis, the Deputy Chairman on a full-time basis. The salaries of the Chairman and Deputy Chairman would be £3,000 a year each. Mr. Gordon Graham and Mr. Greenwood would receive £500 a year each, and the other two members would be unpaid.

The Chairman, Deputy Chairman and members would be reimbursed such reasonable out-of-pocket expenses as were necessarily incurred in their duties.

### Iron and Steel Board

Mr. Duncan Sandys, Minister of Supply, on May 21 informed the House of Commons that he had appointed the Iron & Steel Board in accordance with the provisions of the Iron & Steel Act, 1953. He had appointed 11 members, leaving four places which could be filled if this should be found desirable in the light of the board's experience. The following had agreed to serve as whole-time members of the Board: Sir Archibald Forbes, Independent Chairman; Sir Lincoln Evans, Vice-Chairman; and Mr. Robert Shone.

Since it would not be appropriate for a whole-time member of the board to hold any other appointment connected with the iron and steel industry, Sir Lincoln Evans had arranged to resign his appointment as General Secretary of the Iron & Steel Trades Confederation. Likewise Mr. Robert Shone's appointment as director of the British Iron & Steel Federation had been terminated.

In addition the following had agreed to serve as part-time members of the board: Sir Andrew McCance, Messrs. Neville Rollason, James Owen, Wilfred Beard, James Shaw, Charles Connell, Sir Percy Lister, and Mr. George Beharrell.

**RAILWAY BENEVOLENT INSTITUTION.**—At its meeting recently the board of the Railway Benevolent Institution granted annuities to three widows and eight members involving an additional liability of £187 7s. per annum. Fifty gratuities were also granted amounting to £567 10s. to meet cases of immediate necessity.

## Contracts & Tenders

The Crown Agents for the Colonies have placed an order with Metropolitan-Cammell Carriage & Wagon Co. Ltd. for nine bogie goods brake vans for the Nigerian Railway.

The Victorian Railways have placed an order with the Gloucester Railway Carriage & Wagon Co. Ltd. for 90 second class electric suburban motor coaches, without bogies. The cost of the order is some £750,000 f.o.b. The stock is for use on the Melbourne suburban system. As recorded in these columns in our May 9, 1952 issue, the English Electric Co. Ltd. is supplying the traction motors and control equipment.

The Railway Executive has placed contracts with Metropolitan-Cammell Carriage & Wagon Co. Ltd. for 450 30-ton bogie bolster wagons, and with Head, Wrightson & Co. Ltd. for 141 50-ton rail, sleeper and ballast wagons and three 40-ton flat trolley wagons.

British Railways, Eastern Region, have placed the undermentioned contracts:—

Cleveland Bridge & Engineering Co. Ltd., Darlington: forming of embankments between Skellow Junction and Bramwith Goods, laying of permanent way, extension of underline bridge No. 5 over engine drain and underline bridge No. 6 over cattle creep. Construction of sub-structures and erection of superstructures of underline bridge No. 7 over River Don and underline bridge No. 8 over River Dun Navigation and extension of culvert.

T. E. Cundy & Son Ltd., Leicester: cleaning and painting of station buildings, awnings, roofs, warehouses, etc., at Conisbrough Station and on South Yorkshire Joint line.

J. Arundel & Co. (Louth) Ltd., Louth: cleaning and painting of station buildings, awnings, roofs, warehouses, etc., on the Nottingham-Lincoln line, Mansfield-Southwell line and Mid-Notts Joint line.

Arundel (Contractors) Ltd., Bradford: cleaning and painting of bridges between Whitemoor Junction and Welland Bridge.

R. Ridd & Son (Contractors) Ltd., Hornchurch: cleaning and painting of offices, mess-rooms, toilets, roofs, warehouses, etc., at Kings Cross Goods Yard (Fish Road); cleaning and painting of station buildings, awnings, roofs, warehouses, etc., at Newark North Gate, Bottesford line, and Newark-Lincoln line.

The Director-General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for the following:

5,900 axlebox bearing (c. and w.), 7 in. × 3½ in.  
4,500 axlebox bearing (c. and w.), 7 in. × 4 in.  
1,200 axlebox bearing, 8 in. × 4½ in., for w.d. wagon  
700 axlebox bearing, 7 in. × 4 in.

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/16254-D/IV, and will be received up to 10 a.m. on June 8.

The General Electric Co. Ltd. has received from the Netherlands Railways an order for two 1,224 kW., 1,500 volt pumpless steel tank rectifier equipments, bringing the capacity of G.E.C. rectifiers in service on the Netherlands Railways to nearly 30,000 kW., representing a total cost of approximately £100,000.

Of this total 20 units, each rated at 1,224 kW., are for use in permanent substations, and some of these have been designed to operate in conjunction with transformers which were pillaged by the Germans



during the war and have since been recovered by the Dutch engineers. In addition four mobile equipments incorporating G.E.C. transformers have been ordered to deal with peak loads at various points on the system.

The closing date for tenders called for by the Israeli Ministry of Communications and listed in our May 8 issue has been postponed. Tenders should now be submitted to reach the Ministry of Communications, Main Post Office Buildings, Jerusalem (new City), Israel, by noon on June 9.

The Special Register Information Service of the Board of Trade, Commercial Relations and Exports Department, reports that the United Kingdom Trade Commissioner at Sydney has notified a call for tenders issued by the Western Australian Government Tender Board for 2,000 standard coach and wagon tyres in part-machined condition.

Tenders should reach the Western Australian Tender Board, Murray Street, Perth, by 10 a.m. on July 16. It is also understood that tenders may be submitted to the Agent-General for Western Australia, Savoy House, 115-116, Strand, London, W.C.2, in which case tenders should reach the Agent-General by noon on July 3. A copy of the tender schedule 149A—1953 and drawing No. 4693 are available for inspection at the Board of Trade by representatives of interested United Kingdom manufacturers until June 6, after which date they will be available on loan in order of application. A further copy of Schedule 149A—1953 without drawing is available on loan. CRE/16589/53 should be quoted.

The Director-General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for:—

540 guard axle 7 in.  $\times$  3½ in. Jn. for wagons.  
320 guard axle 7 in.  $\times$  4 in. Jn. for wagons.

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting SRI/16320-D/1, and will be received up to 10 a.m. on June 15.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, reports that the United Kingdom Trade Commissioner at Melbourne has notified a call for tenders issued by the Commissioners of the South Australian Railways for the supply of ten 650/750 h.p. diesel-electric shunting locomotives.

Tenders should reach the Secretary, South Australian Railways, North Terrace, Adelaide, South Australia, by noon on July 14. A copy of Specification 4917 and conditions of contract with relevant drawings is available for inspection at the Board of Trade (Room 6176) until June 16, and thereafter available on loan in order of application. CRE/18360/53 should be quoted.

**FLUORESCENT LAMP PRICE REDUCTION.**—Philips Electrical Limited has reduced as from May 14 the price of the instant-self-start 4 ft. 40W. MCFB/U fluorescent lamp from 14s. 9d. to 13s. 3d. Purchase tax is now 2s. 5d., making the total price 15s. 8d., a total saving of 1s. 9d. on each lamp. The Philips MCFB/U lamp is the fluorescent component of the Philips instant-self-start lighting system, which uses a tungsten ballast lamp with each fluorescent lamp, and dispenses with chokes, capacitors and starters.

## Notes and News

**Manager of Diesel Train Division Required.**—Applications are invited for the post of manager of diesel train division of British United Traction Limited. See Official Notices on page 635.

**Accident at Bradford Forster Square.**—One person was killed and ten injured on May 20 outside Forster Square Stations, Bradford, when an engine hauling coaches to the yard collided with a four-coach train entering the station.

**"The Link" Ceases Publication.**—In the interests of economy Coras Iompair Eireann decided to discontinue publication of its weekly staff journal *The Link* and the last issue of the journal appears today (May 29).

**Closing of London Midland Region Stations.**—On and from June 1 Barrow for Tarvin, and Tean Stations, London Midland Region, will be closed. Buxton Central Coal Depot and Lenton Goods Depot were closed on May 4 and alternative arrangements have been made for dealing with traffic.

**C.I.E. Loan Fully Subscribed.**—The new £2,500,000 Coras Iompair Eireann Transport Stock Loan announced in our May 22 issue was fully subscribed. Dublin business circles said that the rapid buying up of the stock seemed to be a reflection of confidence in the C.I.E. reorganisation plans. The success of the loan also was helped by the Government's guarantee of the stock.

**British Railways Coal, Iron and Steel Carrying.**—British Railways carried over 3,388,200 tons of coal during the eight days ended 6 a.m. on May 26, 176,000 tons more than during the corresponding period last year. This includes 402,400 tons (95,000 tons up on last year) carried during the Whitsun holiday period when passenger traffic was at its height. The high totals of 353,200 tons of iron ore and 229,997 tons of iron and steel were conveyed during the week ended May 16.

**Decoration of Eastern Region Named Trains.**—Coronation decorations on "Flying Scotsman," "Broadman" and "Master Cutler" will be on the form of a specially-designed board which will be fixed to the centre lamp bracket on the buffer beam of the locomotives hauling the trains and will be in addition to the normal headboards carried by these trains. The design will feature the crown and cypher with coloured pennants flowing away on either side.

**Traders' Traffic Conference Congress at Liverpool.**—With a record attendance for their congresses, members of the Traders' Traffic Conference were the guests of the Mersey Docks & Harbour Board for a cruise on the Mersey and lunch on board, on Tuesday, May 12. At the dinner at the Adelphi Hotel in the evening the toast of the City of Liverpool was proposed by Mr. Harry Hodson of the Distillers Co. Ltd., Hull, and responded to, in a combination of the light and serious, by the Lord Mayor of Liverpool, Alderman Albert Morrow, J.P. The toast of "the Guests" was proposed by the Chairman of the Conference, Lt.-Colonel H. R. Caulfield-Giles. Speaking of the Transport Act, he said that though there was some good and some bad in it no doubt,

being now the law of the land, it was the duty of all loyal traders to do their best to make it work. He welcomed the freedom given to the railways who, he felt, would not abuse their new powers but would act with a realisation of the community of interest between themselves and the trade and industry of the country. The toast was responded to by Sir Rex Hodges, General Manager of the Mersey Docks & Harbour Board.

**Liverpool Overhead Railway.**—Traffic of the Liverpool Overhead Railway for the year to date show an increase of £2,155, the aggregate to the week ending May 17 being £57,784. The total for the seven days to May 17 was £3,218, an increase of £299.

**Indian Centenary Exhibition Closed.**—The Railway Centenary Exhibition, which opened in New Delhi on March 7, closed on May 17. It was visited by nearly 1,000,000 persons. Most of the exhibits will be sent on a nation-wide tour in exhibition trains due to leave Delhi on June 8. They will cover 30,000 miles and stop at about 50 stations for a week each.

**Eastern Region to Decorate Stations for Coronation.**—Eighteen stations in the Eastern Region are decorated for the Coronation until June 13. At Kings Cross and Norwich Thorpe, the exterior is floodlit, and many flags, decorative shields, garlands, Coronation plaques, pennants and much bunting are used. Other stations similarly decorated are Liverpool Street, Fenchurch Street, Tilbury Riverside, Southend Central, Southend Victoria, Parkeston Quay, Ipswich, Cambridge, Peterborough North, Lincoln Central, Lincoln St. Marks, Doncaster, Sheffield Victoria, Sheffield Midland, Chesterfield Midland, and Chesterfield Central.

**Port of Baltimore Facilities.**—On May 21 a film entitled "Baltimore—World Port" was shown at the Institute of Transport, 80, Portland Place, W.1. The film, which demonstrated the facilities available at the port of Baltimore, was presented by Mr. Samuel Shapiro, President of Samuel Shapiro & Company, Custom House brokers and international freight forwarders at Baltimore, and Colonel A. C. Bonnafton, General European Agent of the Pennsylvania Railroad Company, which serves the port of Baltimore. Mr. Shapiro also represented the Baltimore Association of Commerce. The showing was attended by representatives of prominent shipping companies and shipping and forwarding agents.

**"Maid of Ashton" in Service.**—The first of British Railways new passenger vessels for the Clyde, the *Maid of Ashton*, went into service on May 25. Under a £1,000,000 scheme, four new passenger vessels and three dual-purpose vessels are on order for the Clyde. It is hoped to have all four passenger vessels sailing by the first week in July. The first of the three dual-purpose vessels is expected to be in service early in October. The *Maid of Ashton* will be engaged all the year round on the Gourock-Kilcreggan-Holy Loch service. The second new passenger vessel will go on service between Craigendran and Rothesay which should improve the overall facilities for passengers from the north bank of the river to the Clyde Coast resorts and also provide connections from some of the smaller piers to the main cruising steamers. The third

## OFFICIAL NOTICES

*The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive, or a woman aged 18-59 inclusive unless he or she, or the employment, is exempted from the provisions of the Notification of Vacancies Order, 1952.*

**N.E.R. HISTORY.**—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager. N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**THE "PAGET" LOCOMOTIVE.** Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Williams central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

and fourth passenger vessels will give additional summer services, particularly excursions from and to the various Clyde resorts. When these new passenger vessels are available, it is hoped to develop short afternoon and evening excursions as well as short morning sails. These two motor vessels will also be available for special chartering and will also act as tenders to Atlantic liners calling at the Tail of the Bank.

**Increased Sunday Service on Tyneside Electric Line.**—To cater for the large number of early summer visitors travelling to the coast on Sundays by the North Tyneside electric lines, a 20-min. interval service is now given. There is now a train every 10 min. on Sundays from Newcastle via Jesmond or via Wallsend, from 9.55 a.m. to 11.5 p.m.

**Loan for Silentbloc Development.**—Silentbloc Limited has arranged to borrow up to £200,000 from the Industrial & Commercial Finance Corporation on the security of a 5½ per cent debenture. This is to meet the cost of building a new factory at Crawley with the object of relieving congestion at its present two factories and providing additional floor space for expansion.

**Diesel Train Operating in North Wales.**—Since Monday, May 18, the lightweight diesel train built by A.C.V. Sales Limited, has been operating on the London Midland Region between Bangor, Caernarvonshire, and Amlwch, in Anglesey. The train, described in our May 30, 1952, issue, is being tried out on various services as part of a special study which is being made by the Railway Executive to find out the possibilities of lightweight units for developing traffic and for working it more economically.

**L.M.R. District Commercial Offices Merger.**—The London Midland Region announces that the merging of the Nottingham and Derby offices of the Commercial Superintendent's Nottingham-Derby District will shortly take place. The Nottingham and Derby offices functioned separately under the co-ordinating control of Mr. W. B. Carter, District Commercial Superintendent. The Derby office has administered the former Midland portion of the District, and the office at Nottingham Victoria has been responsible for the ex-Eastern Region stations embodied in the London Midland Region. The main administration offices will be at Derby. A small administrative organisation will re-

**THE PERUVIAN CORPORATION** have the following vacancies on the railways in Peru:—Central Railway. **LOCOMOTIVE ASSISTANT**, preferably single and between 26/30. Qualifications: full apprenticeship with British Railways or locomotive builders, and experience in one or more of the following:—Railway Machine Tool Operation, Welding, Boiler Work, Locomotive Running or Drawing Office. **ACCOUNTANT** (Traffic Auditor). About 30 years of age, preferably single with general auditing and railway accounting experience. Southern Railways. **ASSISTANT CIVIL ENGINEER** (Divisional) with practical experience on railway maintenance. Guayaquil-La Paz Railway, Bolivia. **TWO ASSISTANT ENGINEERS**, one with Electrical Mechanical Apprenticeship including experience with diesel engines and the other with Apprenticeship Permanent Way Department of British railway and with Drawing Office experience. Good education activity and first class health essential, age 25/30, single. Northern Railways. **DIESEL ENGINEER** with practical experience on diesel locomotives and railcars and workshop management. A knowledge of the Spanish Language is preferable in all these appointments or willingness to learn within 6 months. Apply: SECRETARY, 144, Leadenhall Street, London, E.C.3.

**A MANAGER** is to be appointed to take charge of the newly-formed diesel train division of British United Traction Ltd. Applicants for this position should send full particulars of experience of railway operation and manufacture and marketing of railway equipment, stating age, to the SECRETARY, BRITISH UNITED TRACTION LTD., Hanover House, London, W.1.

**BOUND VOLUMES.**—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

**THE GAS-TURBINE LOCOMOTIVE.** A technical description of the gas-turbine recently constructed by the Metropolitan-Vickers Electrical Co. Ltd. for the Western Region, British Railways. Subjects dealt with include body construction, bogies, traction motors, prime mover, generators and auxiliary equipment. A folding plate drawing of the locomotive is included together with illustrations and diagrams. Reprinted from *The Railway Gazette*, February 1, 1952. Price 5s. Post free 5s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

main at Nottingham Victoria. The new organisation will be under the control of Mr. W. B. Carter, District Commercial Superintendent, London Midland Region, Derby, to whom all communications about passenger and freight services should be addressed. Telephone inquiries or calls in person can be made to either Derby or Nottingham, telephone Derby 2442 or Nottingham 44381.

**More Cheap Day Fares in N.E. Region.**—The North Eastern Region has brought in many more cut day fares in the Darlington district. From May 11 the day return fare by any train from Darlington to Richmond has been reduced to 2s. 1d., as compared with the previous day fare of 3s. 6d.; and to Durham 3s. 3d. as compared with 5s. 3d. A day return ticket

from Darlington to Catterick Bridge is 1s. 10d., Ferryhill 2s. 3d., Northallerton 2s. 10d., and Newcastle 5s. 8d. The reductions also apply between intermediate stations on the Darlington-Richmond, Darlington-Northallerton, and Darlington-Newcastle lines, in either direction.

**Westinghouse Exhibits at Electrical Convention.**—At the British Electrical Power Convention in Torquay next month the Westinghouse Brake & Signal Co. Ltd. will show selections from a new range of rectifiers for connection to 200/250 volt a.c. mains without transformers, d.c. output being between 145 and 190 volts on currents ranging from 0.3 to 60 amp. Other equipment shown will cover most industrial d.c. power supply requirements by conversion from single-phase or three-

## Lord Hurcomb at "London on Wheels" Exhibition



Lord Hurcomb (second from left), Chairman of the B.T.C., in an 1895 Pullman Car at the "London on Wheels" exhibition (see editorial note this week). Others in the group from left to right are Mr. J. W. Watkins, Chief Regional Officer, L.M.R., Mr. Gurney Braithwaite, Parliamentary Secretary, Ministry of Transport, and Mr. F. D. M. Harding, General Manager, Pullman Car Co. Ltd.

phase inputs. A static phase-conversion equipment for providing three-phase supplies will also be shown. Typical charges for batteries of various capacities, including those for electric vehicles, will be exhibited and will include a Westat constant potential rectifier designed to give a stabilised output despite variations in load current or supply voltage.

**Passenger Service Withdrawn from Frickley Station.**—On June 8 the North Eastern Region is to withdraw the ordinary passenger service from Frickley Station and convert the goods station to an unstaffed goods delivery siding. Facilities will be retained for handling special excursion train traffic.

**"Cambria" to Take Part in Naval Review.**—The British Railways (London Midland Region) m.v. *Cambria* is to be in the line of ships at the Naval Review at Spithead on June 15. This vessel is one of the two new passenger ships on the Holyhead-Dun Laoghaire service. It can carry 2,500 passengers.

**Electric Locomotives in South Africa.**—Mr. J. B. Mavor, Chairman of the North British Locomotive Co. Ltd., referred at the company's annual meeting in Glasgow on May 26 to the operation in South Africa of the "4E" class 3,030 h.p. locomotives built by the company, with electrical equipment by the General Electric Co. Ltd. Statements had appeared in the Press, he said, that certain locomotives delivered to South Africa had been giving trouble in certain respects. It was the case that difficulties had been experienced, but the electric locomotives in question were the largest ever constructed for a 3 ft. 6 in. gauge railway, and consequently presented considerable difficulties at the designing stage. A great deal of thought had been given to the correction of these troubles, and it was anticipated that the modifications which had resulted would entirely eliminate the defects. Mr. Mavor also said in the course of his speech that the company's design department had been occupied with the coal burning gas turbine locomotive being built in conjunction with C. A. Parsons Limited for the Ministry of Fuel & Power, and that this work would shortly take shape.

### Forthcoming Meetings

- June 5 (Fri.).—The Railway Club, at 57, Fetter Lane, E.C.4, at 7 p.m. Paper on "The Travelling Post Office," by Mr. C. W. Ward.
- June 6 (Sat.). to 14 (Sun.).—British Railways, Southern Region, Lecture & Debating Society. Continental Tour of the Western Pyrenees.
- June 7 (Sun.).—Railway Correspondence & Travel Society. Second South Yorkshire Rail Tour, leaving Sheffield Midland at 12.40 p.m.
- June 9 (Tues.).—Institution of Civil Engineers at Great George Street, Westminster, S.W.1, at 5.30 p.m. Annual General Meeting.
- June 11 (Thu.).—Railway Students' Association, Evening visit to Feltham Marshalling Yard, British Railways, Southern Region.
- June 13 (Sat.).—Railway Students' Association. Visit to Guinness' Park Royal Brewery. Party will meet at 9.30 a.m.
- June 13 (Sat.). to 14 (Sun.).—Permanent

Way Institution, visit to Dawlish Warren, British Railways, Western Region.

June 15 (Mon.) to 17 (Wed.).—British Iron & Steel Research Association, at Ashorne Hill, Leamington Spa. Conference on Heat Treatment Practice.

June 18 (Thu.).—Institution of Civil Engineers at Great George Street, Westminster, S.W.1, from 7.45 to 12 p.m. *Conversazione*.

June 20 (Sat.).—British Railways, Southern Region, Lecture & Debating Society. Afternoon visit to London Transport Garage at Reigate.

June 24 (Wed.). to 26 (Fri.).—British Wood Preserving Association Annual Convention at Trinity College, Cambridge.

June 25 (Thu.).—Railway Students' Association. Evening visit to inspect new

signal installation at Euston Station, London Midland Region of British Railways.

June 27 (Sat.).—Railway Students' Association. Summer outing to Woking and Hindhead. Party assemble at 2 p.m. at Woking Station, British Railways, Southern Region.

June 27 (Sat.).—Permanent Way Institution, Leeds and Bradford Section. Visit to Earles Cement Works at Hope.

June 28 (Sun.).—Railway Correspondence & Travel Society. Twenty-fifth anniversary special to Exeter. Train will leave Waterloo Station, British Railways, Southern Region, at 9.45 a.m.

June 29 (Mon.).—Indian State Railways Annual Dinner at the Rembrandt Hotel, Thurloe Place, London, S.W.7, at 7 for 7.30 p.m.

## Railway Stock Market

As was to be expected, little business has been passing in stock markets now attention is centred on the Coronation festivities. Nevertheless, the general trend was firmer, and industrial shares, after their recent sharp reaction, tended to firm up in response to a little buying. It is being pointed out in the City that many industrial shares appear to have declined to unduly low levels, because, although it cannot be assumed that the past year's level of profits will be maintained, there would have to be a very heavy fall in profits to necessitate lower dividends. Buying has been selective and centred on shares of companies regarded as offering reasonable prospects of maintaining dividends at last year's rates. In contrast, British Funds became a little less firm, though this was not due to selling, but to rather less demand in evidence. The City is continuing to talk of prospects of a lower bank rate, and believes that in due course long-dated and irredeemable gilt-edged stocks, such as 3½ per cent War Loan, may very well be several points above current levels before the end of the year. Despite the firmer tendency in industrials, the general belief is that markets are unlikely to develop a sustained rally until the international situation is a good deal clearer.

There was not much business in foreign rails. White Pass & Yukon common shares continued prominently active, however, but after improving have receded to \$27 at the time of writing and seem likely to remain a fluctuating market for the present. The convertible debentures naturally move closely with the shares and are down to £98 at the time of writing. Despite their recent sharp fall, many holders of these shares and debentures still have substantial profits over the prices at which they bought. Brokers are advising them to sell half of their holdings and retain the balance as a long term speculation. It is realised that the current level of the shares is only justified if a long view is taken—unless, of course, there is an offer for the shares by U.S. interests wishing to gain control. Nevertheless, there seems no reason to believe that rumours of an offer are any nearer now than they were earlier this year when unconfirmed take-over talk was current. The recent improvement in United of Havana stocks has not been fully held, the "A" being 61, the 4 per cent "B" 55½, the second income stocks 22½, and the consolidated stock 44. The market believes that in due

course a satisfactory offer for the railway will come from Cuba, and it is assumed that this would mean a pay-out for stockholders above current market prices for their stocks. On the other hand, it is realised that payment for the railway by the Cuban Government or by Cuban interests would probably not be in a lump sum, but spread over a period of years.

Antofagasta ordinary and preference were 9 and 44 respectively, and elsewhere, Manila debentures reflected a little selling which put the "A" debentures easier at 80, while the preference shares were 8s. 6d. Canadian Pacifics were active, as usual, but at \$45½ have not held best prices; the 4 per cent preference stock was £64½ and the 4 per cent debentures £81½. San Paulo units were 6d. and Nitrate Rails shares 21s. 3d. Taital £5 shares have changed hands at slightly over 15s., while, in other directions, International of Central America no par value shares transferred up to \$15½. Costa Rica ordinary marked 10, the 6½ per cent debentures 67, and the 6 per cent debentures 61½. Guayaquil & Quito 5 per cent bonds have been dealt in at 47½. Among Indian stocks, Barsi marked 118½. In home stocks, Metropolitan Assented was dealt in up to 43½ and Central London guaranteed around 80½.

Engineering and kindred shares tended to rally after their recent decline. This was attributed mainly to ending of the recent selling, which although not heavy, has extended over several weeks. It is expected that dividends will be maintained in future, but sentiment is affected by the fear that engineering shares generally might decline later in the year, if, as is being suggested, the big issue of steel shares, which are to return to the private investor, might be offered at prices showing yields of 7½ per cent or over. This is, of course, generally above the yields obtainable on leading engineering and kindred shares at the present time. It would therefore not be surprising if, as far as engineering shares are concerned, there will be a general tendency to await the terms of the steel issues.

Among shares of locomotive builders and engineers, Beyer Peacock were 31s. 9d., Hurst Nelson 41s., North British Locomotive 13s. 1½d., while Vulcan Foundry strengthened to 20s. 3d. Gloucester Wagon 10s. shares were better at 11s., Charles Roberts 5s. shares 14s. 6d., Wagon Repairs 5s. shares 11s. 6d., and Central Wagon changed hands around 66s. 9d.